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ILLINOIS FARM ECONOMICS

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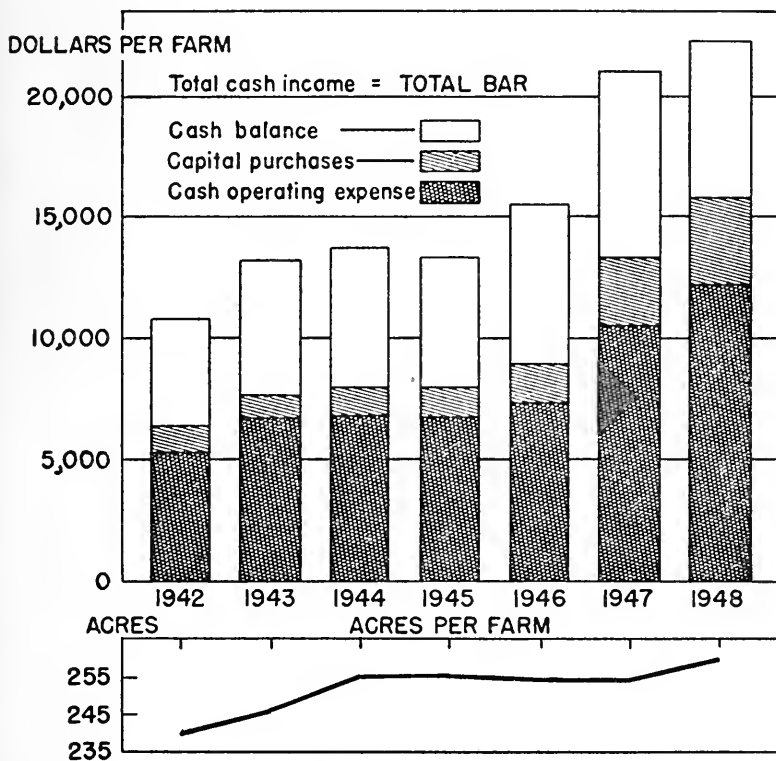
College of Agriculture · University of Illinois · Department of Agricultural Economics

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Numbers 171 and 172

Summary of Annual Farm Business Reports of 2,276 Illinois Farms For the Year 1948



Total cash income, capital purchases, cash operating expenses, and cash balance for Illinois farms, 1942-1948. Averages obtained by weighting area averages by number of census farms.

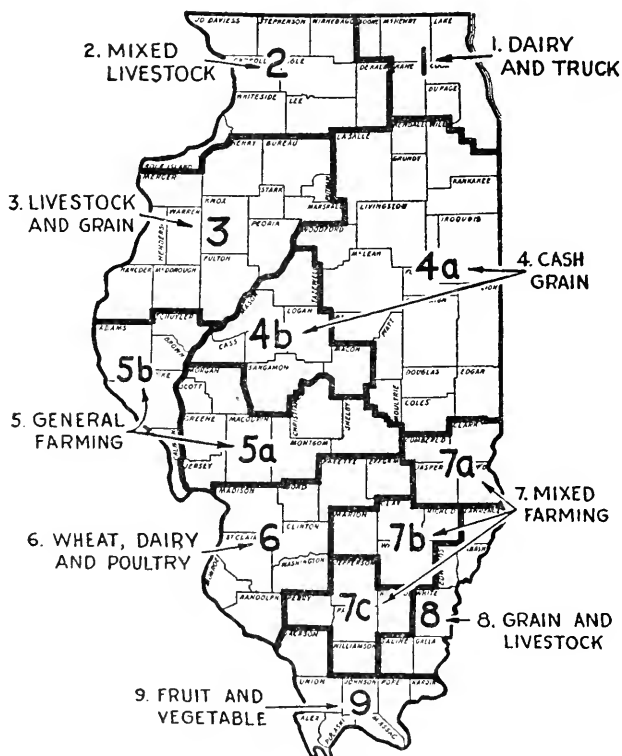
Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

FOREWORD

This analysis of farm income and expense for 1948 and earlier years will be of value to farmers in making adjustments in a period of changing price levels. For more than two years, costs of operating farms have been advancing more rapidly than total farm income. In addition to helping farmers make short-time adjustments, farm records have a continuing value in helping individuals to make long-time adjustments in the organization and operation of their farms which will make them more profitable.

Entirely aside from the value of farm records to the individual farmer, they are useful in studying national agricultural problems and policy; also they provide helpful information for teaching purposes and for the information of organizations and individuals who are working with farmers.

H. C. M. CASE



THE NINE MAJOR TYPE-OF-FARMING
AREAS IN ILLINOIS

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SUMMARY OF FARM BUSINESS RECORDS ON 2,276 FARMS IN ILLINOIS FOR 1948¹

A. G. MUELLER, F. J. REISS and J. B. CUNNINGHAM

Net cash income an acre. The 1948 average net cash income an acre for accounting farms decreased \$5.52 from the record high earnings in 1947. The earnings figure was \$17.76 for 1948, compared to \$23.28 in 1947 and \$19.63 in 1946.

The average net cash income an acre for Illinois accounting farms from 1934 to 1948 was as follows:

1934.....\$5.40	1939.....\$ 5.40	1944.....\$17.30
1935..... 5.14	1940..... 6.82	1945..... 15.35
1936..... 7.40	1941..... 9.91	1946..... 19.63
1937..... 5.33	1942..... 14.99	1947..... 23.28
1938..... 5.25	1943..... 18.55	1948..... 17.76

The net cash income an acre was computed by subtracting the value of unpaid labor from the cash balance for the year and dividing that difference by the number of acres in the farm. In order to calculate the state averages, farming-type area averages were weighted by the acres of land in farms (census) in each area.

These returns do not include the inventory changes or the money value of food, fuel, and other items of living obtained from the farm. The net cash income an acre is one of the best measures for comparing incomes of groups of farms over a period of years, or for contrasting the level of income for different type-of-farming areas. During any period of years earnings fluctuate more widely from year to year when inventory changes are included, since there are usually inventory losses when prices are declining and inventory increases when prices are rising.

Effect of price levels on earnings. In 1948 the ratio of prices received by farmers to prices paid for supplies was 125 percent of the 1910-1914 ratio. This same ratio in 1947 was 129 percent of the 1910-1914 base. The cost-price relationship, although somewhat lower in 1948 than in 1947, was favorable for a continued high level of farm income.

An index of prices received by Illinois farmers continued to increase from 300 in 1947 to 311 in 1948 (1910-14 = 100). For the same years an index of prices paid by farmers in the United States increased from 234 to 249. Nineteen hundred forty-eight was the first year since 1939 that the index of prices paid by farmers increased more than the index of

¹Averages in this report include 1,764 Farm Bureau Farm Management records and 512 Extension project records. In order to expedite preparation of this report, not all of the records were included when more than 50 records were summarized from one county. A total of 2,438 Farm Bureau Farm Management records and 634 Extension project records were summarized in 1948.

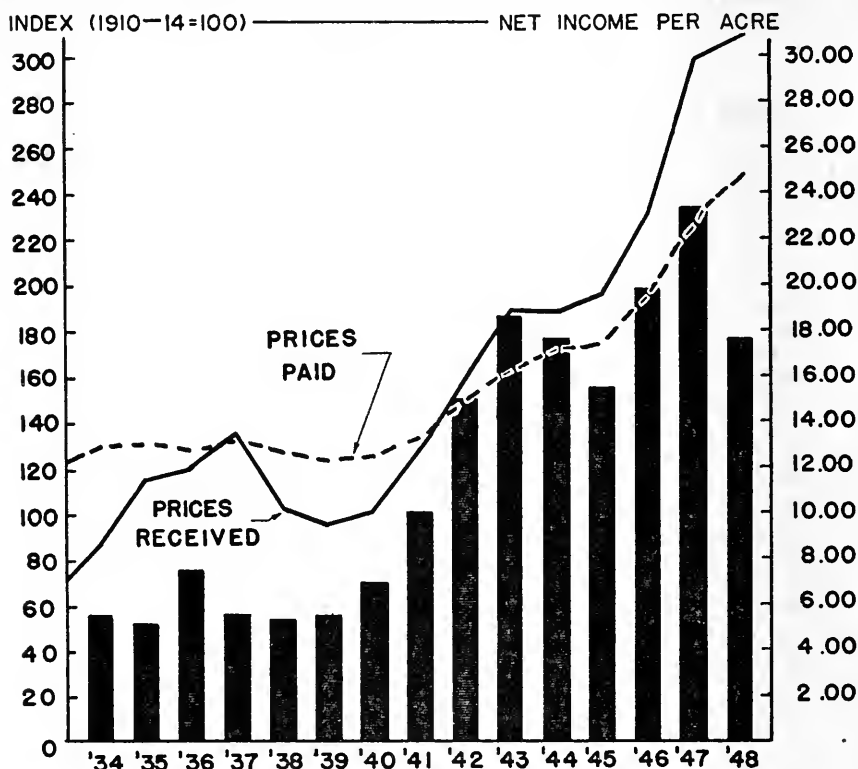


FIG. 1.— AVERAGE NET CASH INCOME AN ACRE (UNPAID LABOR DEDUCTED) ON ILLINOIS ACCOUNTING FARMS, PRICES PAID BY FARMERS IN THE UNITED STATES, AND PRICES RECEIVED BY ILLINOIS FARMERS, 1934-1948

prices received. A result of the less favorable cost-price ratio in 1948 was a lower net cash income per acre on Illinois farms.

In the future, as farming costs remain high and farm prices decline, we can expect lower net farm incomes on Illinois farms. For individual farms, efficiencies reflecting in lower farm costs will become more important in determining the level of net income.

Accounting farms represent better than average conditions. In 1948 the accounting farms averaged 98 acres larger than all farms in the state and produced seven more bushels of corn per acre. Previous studies indicate that accounting farms, in addition to operating larger farms, are, as a group, located on better-quality soils than the average for the state.

Data presented in this report should not be interpreted to be representative for all farms in the state. Information given in Tables 1

through 17 are useful in showing trends in income, expenses, and investments over a period of years; also for comparing levels of income for the different areas of the state.

Value of farm products used in the household. In the farm business reports, which have been published separately, and in the tables at the back of this report, the farm value of meat, milk, eggs, and other farm products used in the household was included as a source of income. These products have also been included in comparing the 1942-1948 records in Table 1. Due to price increases, the average value of farm products used in the household has shown a steady increase since 1940.

Depreciation and maintenance expenses for the residence are omitted except on tenant-operated farms in the Farm Bureau Farm Management Service areas. Thus, the accounting for farm buildings in the Farm Bureau Farm Management Service areas and on owner-operated farms in other areas agrees with income tax rulings.

Cash income per farm. The average cash income and expenditures on Illinois farms continued to increase to new record highs in 1948 (Table 1). Total cash income in 1948 increased by 5 percent over 1947, while cash expenditures increased by 18 percent for the same period. The greater increase in cash expenditures in 1948 resulted in a lower cash balance on Illinois farms.

The cash balance per farm of \$6,444 in 1948 was \$1,332 less than in

TABLE 1.—SELECTED ITEMS OF INCOME AND EXPENSE ON ILLINOIS ACCOUNTING FARMS, 1942-1948*

Item	1942	1943	1944	1945	1946	1947	1948
Acres per farm.....	239	246	255	255	254	254	259
Cash income per farm.....	\$10 865	\$13 204	\$13 748	\$13 376	\$15 544	\$21 054	\$22 157
Cash operating expense.....	5 456	6 691	6 831	6 779	7 421	10 566	12 197
Capital purchases.....	1 014	857	1 167	1 229	1 659	2 712	3 516
Cash expenditures per farm.....	6 470	7 548	7 998	8 008	9 080	13 278	15 713
Cash balance.....	\$ 4 395	\$ 5 656	\$ 5 750	\$ 5 368	\$ 6 464	\$ 7 776	\$ 6 444
Inventory increase.....	1 562	778	-274	190	2 500	4 595	1 976
Farm products used in household..	342	397	405	413	456	485	492
Cash balance plus inventory increase and farm products used in household.....	\$ 6 299	\$ 6 831	\$ 5 881	\$ 5 971	\$ 9 420	\$12 856	\$ 8 912
Unpaid labor.....	1 011	1 374	1 634	1 696	1 783	2 085	2 078
Net farm earnings.....	\$ 5 288	\$ 5 457	\$ 4 247	\$ 4 275	\$ 7 637	\$10 771	\$ 6 834
Gross receipts per acre ^b	\$36.87	\$41.53	\$40.27	\$41.44	\$53.34	\$79.65	\$63.31
Total expense per acre ^c	14.82	19.35	23.62	24.61	23.13	37.59	37.76
Net receipts per acre ^b	\$22.05	\$22.18	\$16.65	\$16.83	\$30.21	\$42.06	\$25.55
Net income per acre (cash basis) ^d ..	14.99	18.55	17.30	15.35	19.63	23.28	17.76

* These state averages were obtained by weighting area averages. The last item, net income per acre (cash basis), was weighted by the acres of land in farms in each area; all other items were weighted by the number of census farms in each area.

^b Receipts include inventory changes and farm products used in household.

^c Total expense includes unpaid labor charge.

^d Cash balance less unpaid labor.

1947 and \$20 less than in 1946. The 1948 cash balance, although the lowest for the past three years, is still more than three times greater than the average cash balance of \$1,949 for the five pre-war years of 1935-1939. Income tax, debt and interest payments must be deducted from the cash balance per farm to determine the amount available for family living and savings.

Cash farm business expenditures. Illinois accounting farms spent more money to operate, equip, and improve their farms in 1948 than was spent in any previous year on record. Total cash expenditures of \$15,713 per farm in 1948 was \$2,435 higher than the 1947 figure and exceeded the total cash income of \$15,544 in 1946, just two years previous.

The higher cash expenditures in 1948 were primarily due to (1) higher prices paid for gas, oil, machinery repairs, and other farm supplies; (2) greater expenditures for building repair and maintenance and fertilizer applications; (3) higher prices paid for livestock purchases; (4) increased purchases of capital items and higher prices paid for replacement of capital items. Other reasons for higher expenditures were the increasing trend for farmers to purchase a greater percentage of the materials used to operate their farms and the upward trend in size of farms.

Inventory increases. With the exception of 1944, inventories for all accounting farms have increased in value each year since the depression year of 1932; these increases have ranged from \$190 in 1945 to \$4,595 in 1947 and \$1,976 in 1948 (Table 1).

An inventory increase indicates that the combined value of livestock, grain, improvements, and machinery was larger at the end of the year than at the beginning. The ending inventory of each year is for the same farms as the beginning inventory, but the farms included in the averages are not exactly the same from year to year. Some old cooperators are dropped each year and new ones added.

The inventory increases since 1932 reflect the increases in prices for farm products, investments in improvements and machinery, and an accumulation of livestock and grain. For each year since 1932, excepting 1944, earnings have been higher when inventory changes have been included. Inventory losses averaged \$274 in 1944 and \$866 for the three years 1930-1932.

The inventory gain in 1948 was rather unusual. Inventory prices per bushel of corn, oats, and soybeans at the end of 1948 were approximately one-half the unit prices at the beginning of the year. Unit prices of other grains and livestock were also lower at the end of the year. In spite of these price declines, inventories in terms of dollars increased on Illinois

farms. Two unrelated situations were responsible for this inventory increase. One was the record crop yields in 1948, resulting in a great increase in carry-over of corn and other grains on Illinois farms, along with a small increase in the numbers of livestock carried over. The other situation was capital purchases in terms of dollars greatly in excess of depreciation on accounting farms. These two items explain a great part of this inventory change.

Prices of farm products. Indicative of what has been happening to prices of many farm products is Figure 2 which gives the average monthly price of corn and hogs from January, 1948, through July, 1949. The January, 1948 corn price of \$2.57 was the highest figure recorded in recent years. After a sharp price break in February, corn prices recovered until midyear prospects for a bumper corn crop again depressed the corn market. Other economic conditions may also have contributed to the price decline in corn.

The average corn price for 1948 was \$1.89 per bushel, only one cent below the 1947 average. However, the declining corn market sharply reduced inventory prices, and corn forced to market by lack of storage at harvesting time was sold at sharply lower prices. These factors contributed to lower net farm incomes on Illinois farms.

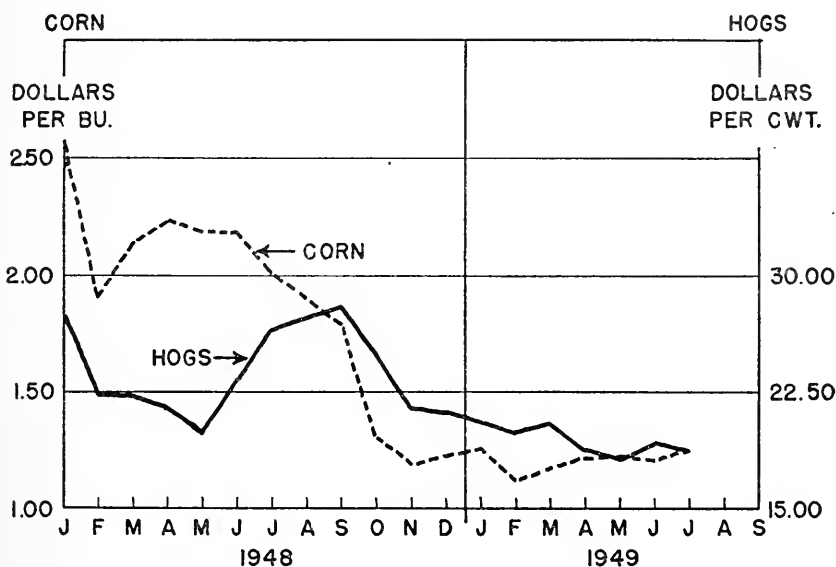


FIG. 2. — AVERAGE MONTHLY ILLINOIS FARM PRICES OF CORN AND HOGS FOR 1948 THROUGH JULY, 1949

Hog prices also fluctuated during the year, but with a somewhat different pattern. With the exception of a price break early in 1948, hog prices followed somewhat of a normal seasonal pattern.

Crop yields in Illinois. Crop yields in 1948 were 31 percent above the 1935-1944 average and 8 percent higher than the previous record year of 1946 (See Figure 3). All counties in the state had yields well above the 1935-1944 average, with 11 counties in the south-central part recording yields over 60 percent above the 10-year average.

The state average corn yield of 61 bushels per acre was 4 bushels higher than the previous record high established in 1946. In general, the crop was of good quality except for some high moisture content and moldy corn in the northern 15 to 20 counties in the state. The record production of 550 million bushels for the state created some storage problems; and much of the crop was stored in unsuitable makeshift facilities.

The wheat yield of 24 bushels per acre set a new high for the state. Soybeans and oats yields were also excellent, both crops yielding within a bushel per acre of previous record yields. The appearance of brown stem rot in the soybean area of lower central Illinois reduced yields of this crop somewhat below early expectations.

Variations in net cash income an acre. The 1948 net cash income an acre varied from \$4.28 in Area 7 to \$22.76 in Area 4 (Table 2).

Net cash incomes an acre were lower in 1948 than in 1947 in all areas except Area 1. *Decreases* varied from \$3.21 or 49 percent in Area 7 to \$8.12 or 27 percent in Area 3. Net cash income *increased* \$.93 in Area 1. This same area was the only one to show a decrease in 1947 from 1946. Net cash income for the state as a whole was \$5.52, or 24 percent below the 1947 net cash income an acre.

The net cash income reflects in part the current prices for products

TABLE 2.—NET INCOME AN ACRE (CASH BASIS) FOR ILLINOIS ACCOUNTING FARMS BY FARMING-TYPE AREAS FOR THE PERIODS 1925-1929, 1930-1934, 1935-1939, AND 1940-1944 AND FOR THE YEARS 1946, 1947, 1948^a

Farming-Type Areas	1925-1929	1930-1934	1935-1939	1940-1944	1946	1947	1948
Area 1, Chicago Dairy.....	\$9.59	\$5.25	\$5.61	\$13.72	\$22.29	\$17.89	\$18.82
Area 2, Northwestern Mixed Livestock.....	7.94	4.92	7.23	16.23	22.87	26.57	20.36
Area 3, Western Livestock and Grain.....	9.05	4.86	6.99	16.93	25.03	30.43	22.31
Area 4, East-Central Cash Grain.....	8.91	4.46	7.15	18.15	27.15	30.16	22.76
Area 5, West-Central General Farming.....	6.35	3.23	4.62	11.58	16.36	23.61	19.14
Area 6, St. Louis Dairy and Wheat.....	3.26	2.03	3.32	5.79	7.79	10.52	7.08
Area 7, South-Central Mixed Farming.....	2.21	.91	1.96	3.47	3.97	7.49	4.28
Area 8, Wabash Valley Grain and Livestock..	4.57	1.73	3.96	6.58	7.67	11.26	7.49
State Average (weighted by acres in each area)	\$7.13	\$3.74	\$5.70	\$13.51	\$19.63	\$23.28	\$17.76

^a Includes records of the Farm Bureau Farm Management Service for 1938-1948.

produced in the area and volume of marketings. In 1948 higher costs contributed markedly to lower net cash farm income throughout most of the state.

Variations in net income an acre with inventory change included. When inventory changes were included, the average net income an acre for the state as a whole was 39 percent lower in 1948 than in 1947 (Table 3). This decrease of 39 percent with inventories included is in contrast with a decrease of 24 percent on the cash basis. Thus, the decline in the inventory increase was greater than the decrease in cash balance in 1948.

This is the fifteenth year since 1932 that net income on the inventory basis has been higher than on the cash basis. The only year in the past sixteen years to show an inventory decrease was 1944.

The range in net income per acre with inventory change included was from \$10.13 in Area 7 to \$32.40 in Area 2.

Effect of quality of land on crop yields. Farms in the Farm Bureau Farm Management Service in the northern 58 counties of the state were rated according to the soil productivity ratings established on different soil types by the Soil Survey of the Illinois Agricultural Experiment Station. This system of rating gives the most productive soil types a rating of 1 and the least productive a rating of 10. Ratings are based on inherent or original productivity and are indicative of the capacity of the soils to produce crops.

Table 4 gives the average crop yields by soil ratings for the five-year period 1944 through 1948 on Farm Bureau Farm Management Service farms. Data of this type may be used by farmers to compare their crop yields with average yields on similar quality land. Also, farm management workers, farm appraisers, and extension workers may use these data in farm planning and other uses.

TABLE 3.—NET INCOME AN ACRE (INVENTORY BASIS) FOR ILLINOIS ACCOUNTING FARM BY FARMING-TYPE AREAS FOR THE PERIODS 1925-1929, 1930-1934, 1935-1939, AND 1940-1944 AND FOR THE YEARS 1946, 1947, 1948*

Farming-Type Areas	1925- 1929	1930- 1934	1935- 1939	1940- 1944	1946	1947	1948
Area 1, Chicago Dairy.....	\$11.04	\$2.64	\$10.03	\$20.54	\$32.01	\$46.21	\$24.96
Area 2, Northwestern Mixed Livestock.....	15.11	2.70	11.45	22.23	36.04	56.80	32.40
Area 3, Western Livestock and Grain.....	10.24	2.84	11.43	22.53	37.65	55.57	29.55
Area 4, East-Central Cash Grain.....	10.30	2.76	11.05	21.81	36.49	51.44	30.51
Area 5, West-Central General Farming.....	7.69	1.99	7.92	15.38	28.68	34.21	26.19
Area 6, St. Louis Dairy and Wheat.....	5.41	.92	5.55	8.37	14.81	18.96	16.39
Area 7, South-Central Mixed Farming.....	3.34	.55	3.76	5.46	10.74	15.17	10.13
Area 8, Wabash Valley Grain and Livestock	5.34	1.20	5.22	9.21	15.32	24.45	12.67
State Average (weighted by acres in each area).....	\$ 8.59	\$2.20	\$ 9.23	\$17.56	\$28.39	\$42.03	\$25.55

* Includes records of the Farm Bureau Farm Management Service for 1938-1948.

TABLE 4.—FIVE-YEAR AVERAGE YIELDS OF CORN, SOYBEANS, OATS, AND WHEAT ON SOILS OF VARYING SOIL PRODUCTIVITY RATINGS, FARM BUREAU FARM MANAGEMENT SERVICE FARMS, 1944-1948

Soil rating ^a	Bushels per acre			
	Corn	Soybeans	Oats	Wheat
1.5.....	66	27	51	29
2.0.....	65	26	51	29
2.5.....	63	25	50	28
3.0.....	60	24	47	27
3.5.....	57	23	45	26
4.0.....	55	22	42	25
4.5.....	53	20	40	24
5.0.....	51	19	38	22
5.5.....	49	18	36	21
6.0.....	48	18	34	20

^a Farms were rated according to the system used by the Soil Survey, Department of Agronomy. Ratings are based on inherent productivity with the most productive soil types rating 1.

It should be kept in mind, however, that these yields are averages of soils rated on inherent productivity. The present productivity of a specific farm may be greatly above or below the inherent or original productivity level.

Variations in earnings on Illinois farms. Earnings vary widely on Illinois farms. This was indicated by the variation in an over-all efficiency measure of returns on Farm Bureau Farm Management Service farms. The efficiency measure referred to is the net returns for each \$100 non-feed inputs. This measure expresses as a ratio the net returns (net earnings less a 5 percent capital charge on total investment) for each \$100 inputs other than feed. Feed is omitted in order that inputs on grain and livestock farms may be comparable.

By inputs we mean all costs or expenses connected with the operation of the farm business. Thus we would include all labor, fuel and power, repairs and maintenance, an interest charge on capital investment and taxes, regardless of whether these items were paid for in cash or were unpaid items like family labor. Feed fed to livestock is truly an input item but it was omitted in calculating the above ratio because so much feed is farm grown with the growing costs already included in the farm inputs.

Management is also an input item, but it is almost impossible to place a cost value on the management supplied by different individual farmers. Therefore, we say that the net returns above all the other input items is the return to the management on the individual farm plus any profits or losses not due to management as such.

The range and variation in net returns per \$100 non-feed input on 2,026 Illinois farms is shown in Figure 4. Over 10 percent or 215 of the 2,026 farms failed to realize a net return above inputs. Another 1,663

Net returns per
\$100 non-feed inputs

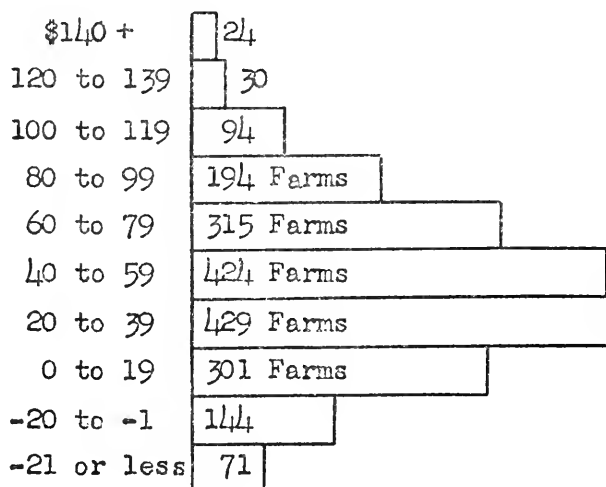


FIG. 4. — FREQUENCY DISTRIBUTION OF NET RETURNS PER \$100 NON-FEED INPUTS ON 2026 FARM BUREAU FARM MANAGEMENT FARMS IN 1948

farms paid all costs and realized returns ranging from \$1 to \$99 net for each \$100 non-feed inputs while 148 farms exceeded \$100 net returns for each \$100 non-feed input. This indicates the wide variation in earnings on Illinois farms; also the possibilities for some farmers to increase their earnings by adopting better management practices and using their farming resources to a better advantage.

LIVESTOCK ENTERPRISE ANALYSES

Livestock enterprise analyses were made on Farm Bureau Farm Management farms on which the enterprise record was complete and accurate and on which the enterprise was as large or larger than a given minimum size. These minimum size limits were six litters of pigs; five cows in beef, dairy or dual purpose herds; three animal units of sheep, and 101 hens. Minimum size limits were used because too many of the records on smaller enterprises are incomplete and inaccurate in feed or production records.

Tables 5, 6 and 7 present different levels in the returns per \$100 feed fed for the enterprise and an average of all records. Feed cost per unit of production was used in place of pounds of feed as a measure of feed inputs since fairly uniform prices were used on all feeds fed.

TABLE 5.—DAIRY ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER \$100 FEED FED

Items	All farms	Returns per \$100 feed fed		
		\$120-159	\$160-199	\$200-239
Number of farms.....	306	60	107	70
Number of cows in herd.....	14.4	14.7	14.3	16.0
Number of milk cows.....	13.9	14.0	13.7	15.6
Percent of milk cows dry.....	18	19	18	17
Total animal units in herd.....	16.5	20.8	20.2	22.4
Value of feed fed to cattle.....	\$3 226	\$3 773	\$3 183	\$3 440
Total returns from cattle.....	5 912	5 234	5 728	7 485
Returns per \$100 feed fed.....	183	139	180	218
Total pounds of milk produced.....	105 010	102 127	104 814	126 037
Pounds of milk per milk cow.....	7 555	7 295	7 651	8 079
Pounds of B.F. per milk cow.....	295	280	290	333
Total pounds beef produced.....	6 568	5 991	6 538	7 134
Percent death loss by weight.....	8.2	12.6	7.5	7.4
Prices received				
Per 100 lbs. milk produced.....	\$ 4.42	\$ 4.22	\$ 4.32	\$ 4.65
Per 100 lbs. cattle sold.....	19.82	18.99	19.78	20.32
Feed cost per 1,000 lbs. milk or 100 lbs. beef.....	18.92	23.28	18.70	17.43

TABLE 6.—POULTRY ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER \$100 FEED FED

Items	All farms	Returns per \$100 feed fed			
		\$100-119	\$120-139	\$140-159	\$160 over
Number of farms.....	377	59	81	58	111
Total value of feed to poultry.....	\$1 099	\$1 205	\$1 143	\$1 200	\$1 018
Total returns from poultry.....	1 503	1 333	1 481	1 794	1 890
Returns per \$100 feed fed.....	137	111	130	150	186
Average number of hens.....	189	186	182	200	210
Eggs produced per hen.....	168	156	167	176	192
Percent of production.....	46	43	46	48	52
Hens in Oct., Nov., Dec.....	221	202	216	238	243
Percent of production.....	46	41	40	51	54
Weight of poultry produced.....	1 534	1 586	1 741	1 949	1 505
Weight of poultry sold.....	1 202	1 072	1 383	1 669	1 237
Average price per pound.....	\$.32	\$.31	\$.32	\$.35	\$.32
Average price per dozen eggs.....	.45	.45	.45	.46	.47
Feed cost per hen.....	5.81	6.48	6.28	6.00	4.85

TABLE 7.—HOG ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER \$100 FEED FED

Items	All farms	Returns per \$100 feed fed			
		\$100-119	\$120-139	\$140-159	\$160 over
Number of farms.....	686	161	200	119	128
Total value of feed fed.....	\$6 709	\$7 208	\$7 070	\$6 680	\$ 5 704
Returns from hogs.....	8 763	7 972	9 129	9 868	10 144
Returns per \$100 feed fed.....	131	111	129	148	178
Number of litters farrowed.....	26	26	27	27	27
Pigs weaned per litter.....	6.4	5.9	6.5	6.8	6.9
Pounds pork produced.....	42 261	40 031	43 885	46 227	46 304
Percent death loss by weight.....	1.7	1.9	1.6	1.2	1.3
Price received per 100 lbs. sold.....	\$22.95	\$22.40	\$23.06	\$23.13	\$23.42
Feed cost per 100 lbs. produced.....	15.88	18.01	16.11	14.45	12.32

In the hog enterprise (Table 7) the amount of feed per 100 pounds produced (feed cost), the price received, the death loss, and the number of pigs weaned per litter were all related to the returns per \$100 feed fed. The size of the enterprise apparently had no relation to the returns.

The dairy cattle enterprise analysis in Table 5 indicates that the feed cost, the price of milk, the price of cattle, the death loss, percent of cows dry, and the rate of milk and butterfat production per cow all are related to the returns per \$100 feed fed to dairy cattle.

In Tables 5 and 8, the item "Feed cost per 1,000 pounds of milk or 100 pounds of beef" must not be interpreted too literally. For example, \$18.92 in the first column of Table 5 does not necessarily mean a feed cost of \$1.892 per 100 pounds of milk. It does mean that the feeding of \$18.92 worth of feed on these farms resulted in the joint production of milk and beef in the ratio of 6.2 pounds of beef for each 100 pounds of milk, or a composite unit of 38 pounds of beef and 620 pounds of milk. The actual composition of this composite unit for the other three columns of Table 5 and Table 8, or for any individual farm, depends upon the ratio of beef to milk production.

TABLE 8.—BREEDING CATTLE ENTERPRISES

Items	Dual purpose	Beef cows
Number of farms.....	49	112
Number of cows in herd.....	11.3	16.3
Number of milk cows.....	6.9	1.5
Percent of milk cows dry.....	21	..
Percent of calf crop.....	99	98
Total animal units in herd.....	19.6	26.7
Value of feed fed to cattle.....	\$2 447	\$2 595
Total returns from cattle.....	3 716	3 702
Returns per \$100 feed fed.....	152	143
Total pounds of milk produced.....	40 888	8 027
Pounds of milk per milk cow.....	5 947	6 506
Pounds of B.F. per milk cow.....	234	..
Total pounds beef produced.....	8 436	13 220
Percent death loss by weight.....	3.8	4.2
Prices received:		
Per 100 lbs. milk produced.....	\$ 3.96	\$ 3.60
Per 100 lbs. cattle sold.....	24.15	25.86
Feed cost per 1,000 lbs. milk or 100 lbs. beef.....	19.68	18.86

TABLE 9.—SHEEP ENTERPRISES

Items	Native flocks	Feeder sheep
Number of farms.....	143	47
Total feed fed to sheep.....	\$429	\$2 534
Total returns from sheep.....	592	1 993
Returns per \$100 feed fed.....	138	79
Total wool and mutton produced.....	2 802	10 821
Percent death loss by weight.....	16.3	15.8
Price received per cwt. sold.....	\$22.54	\$23.42
Feed charge per cwt. produced.....	15.32	23.55

TABLE 10.—FACTORS HELPING TO ANALYZE THE FARM BUSINESS BY FARMING-TYPE AREAS, 1948

Items	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8	Area 9
Number of farms.....	96	377	349	859	161	224	114	60	36
Size of farm, acres.....	222	227	283	274	255	225	283	219	261
Total investment per acre.....	\$ 257	\$ 241	\$ 218	\$ 226	\$ 237	\$ 108	\$ 80	\$ 103	\$ 66
Cash receipts, total.....	\$32 079	\$27 178	\$30 168	\$25 591	\$20 404	\$13 075	\$11 093	\$11 346	\$ 7 262
Cash expenses, total.....	26 889	20 311	21 660	17 249	13 328	9 336	8 047	7 979	5 900
Cash balance.....	6 090	6 867	8 508	8 342	7 076	3 739	3 046	3 367	1 363
Increase in inventory.....	1 364	2 757	2 052	2 129	1 798	2 122	1 655	1 131	1 354
Total unpaid labor.....	1 910	2 247	2 189	2 100	2 197	2 147	1 838	1 726	1 526
Net farm income.....	\$ 5 544	\$ 7 377	\$ 8 371	\$ 8 371	\$ 6 677	\$ 3 714	\$ 2 863	\$ 2 772	\$ 1 191
Inventory basis									
Gross receipts per acre ^a	90.03	85.79	77.13	69.93	63.45	48.62	32.83	41.78	23.42
Total expenses per acre.....	62.63	51.05	45.76	37.70	35.36	29.85	20.95	27.17	17.29
Net receipts per acre.....	\$ 27.40	\$ 34.74	\$ 31.37	\$ 32.23	\$ 28.09	\$ 18.77	\$ 11.88	\$ 14.61	\$ 6.13
Cash basis									
Gross receipts per acre.....	148.49	119.78	106.49	93.30	80.02	58.11	39.27	51.83	27.83
Total cash expense per acre ^b	129.67	99.42	84.18	70.54	60.88	51.03	34.99	44.34	28.46
Net cash income per acre.....	\$ 18.82	\$ 20.36	\$ 22.31	\$ 22.76	\$ 19.14	\$ 7.08	\$ 4.28	\$ 7.49	\$ -.63
Crop yields per acre									
Corn, bushels.....	63.5	74.3	75.4	74.4	74.0	60.6	51.5	61.2	52.6
Soybeans, bushels.....	21.4	26.9	30.2	27.5	29.1	22.2	20.0	22.7	18.3
Oats, bushels.....	66.5	65.4	50.4	49.6	40.8	34.6	24.9	25.5	28.1
Wheat, bushels.....	29.7	28.8	27.6	32.4	31.4	23.3	17.4	14.8	16.7

^a Farm products used in household included.^b Includes charge for unpaid labor.

TABLE 11.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS
IN FARMING-TYPE AREA 5, 1948

Items	Acres per farm					
	60 to 139		140 to 219		220 to 299	
	Livestock farms	Grain farms	Livestock farms	Grain farms	Livestock farms	300 or more Livestock farms
Number of farms.....	16	11	20	10	17	12
Acres per farm.....	113	187	191	266	250	371
Inputs (cost items)						
Land improvements.....	\$ 283	\$ 425	\$ 405	\$ 780	\$ 523	\$ 891
Buildings.....	308	353	302	571	633	913
Machinery and power.....	1 764	1 926	2 175	3 418	3 020	4 497
Labor.....	2 129	2 170	2 445	3 457	3 456	4 459
Taxes.....	242	334	375	480	462	576
Miscellaneous.....	152	103	209	187	546	277
Capital charge.....	970	1 333	1 358	2 181	1 976	2 797
Feed fed to productive livestock.....	4 477	3 558	6 298	5 063	8 985	12 749
Total inputs.....	\$10 325	\$10 202	\$13 567	\$16 137	\$19 601	\$27 192
Returns (income items)						
AAA and miscellaneous.....	44	62	133	89	219	172
Labor and machinery.....	251	146	364	580	630	630
Crop returns.....	4 969	9 320	7 175	15 747	11 315	16 126
Less: Depreciation.....						
Livestock.....						
Cattle—including dairy products.....	2 711	2 222	3 489	1 790	6 066	8 555
Hogs.....	2 988	3 031	4 975	4 838	7 468	10 613
Sheep.....	18	17	105	133	4	4
Poultry.....	828	670	737	498	753	525
Total returns.....	\$11 833	\$15 477	\$16 998	\$23 674	\$26 012	\$36 667
Net returns.....	1 484	5 275	3 431	7 537	6 441	9 475
Rate earned on investment, percent.....	12.66	24.78	17.64	22.28	21.28	21.94
Labor and management earnings.....	\$ 3 020	\$ 6 800	\$ 4 850	\$ 9 058	\$ 7 870	\$11 014
Gross earnings per acre.....	66.64	62.64	59.67	67.72	69.29	61.95
Gross expense per acre.....	44.98	27.30	34.54	31.16	35.66	32.14
Net earnings per acre.....	\$ 21.66	\$ 35.34	\$ 25.13	\$ 36.56	\$ 33.63	\$ 32.81
Land use						
Percent of land area tillable.....	85.1	92.9	81.9	90.0	77.0	76.2
Percent of tillable land in:						
Corn.....	36.0	32.8	27.5	34.9	32.3	33.1
Soybeans.....	17.3	23.3	17.0	25.2	16.3	18.7
Oats.....	12.9	12.2	13.3	17.5	11.4	11.4
Wheat.....	8.4	10.7	12.3	14.7	14.7	14.7
Hay and pasture.....	22.8	20.8	27.4	16.3	25.3	24.3
Other crops.....	2.6	.2	2.3	.8	.4	.5
Expense factors.....						
Labor cost per crop acre.....	\$ 26.04	\$ 13.98	\$ 19.25	\$ 16.17	\$ 21.09	\$ 19.08
Machinery and power cost per crop acre.....	2.58	12.40	17.13	15.99	18.43	19.24
Building cost per acre.....	2.72	1.88	1.58	2.14	2.53	2.52

TABLE 12.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS
IN FARMING-TYPE AREA 6, 1948

Items	Acres per farm							
	60 to 139		140 to 219		220 to 300			
	Fatstock farms	Dairy farms	Fatstock farms	Dairy farms	Fatstock farms	Dairy farms	Grain farms	Grain farms
Number of farms.....	13	14	23	49	22	14		18
Acres per farm.....	117	100	184	171	182	245		253
Inputs (cost items)								
Land improvements.....								
Buildings.....	\$ 265	\$ 264	\$ 508	\$ 389	\$ 269	\$ 568	\$ 452	\$ 452
Machinery and power.....	304	393	412	341	327	428	330	330
Labor.....	1 398	1 620	1 915	2 192	1 886	2 683	2 439	2 439
Taxes.....	2 077	2 552	2 572	2 452	2 215	2 579	2 526	2 526
Miscellaneous.....	154	158	250	230	275	319	293	293
Capital charge.....	131	164	125	177	113	164	102	102
Feed fed to productive livestock.....	740	749	1 036	1 075	1 376	1 360	1 230	1 230
Total inputs.....	3 285	3 601	4 718	4 666	2 721	8 677	3 014	3 014
Return (income items)								
AAA and miscellaneous.....	\$ 8 354	\$ 9 201	\$11 603	\$11 483	\$ 8 881	\$16 634	\$13 755	\$10 386
Labor and machinery.....	55	37	92	82	60	121	114	96
Crop returns.....	161	78	129	269	117	184	172	207
Livestock returns.....	3 743	3 695	6 295	5 320	7 489	7 107	7 660	8 588
Cattle—including dairy products.....	2 384	5 319	2 910	5 705	3 708	4 058	7 011	3 141
Hogs.....	1 513	1 123	2 740	1 172	845	5 676	1 634	982
Sheep.....	1 168	795	35	14	52	834	93	79
Poultry.....			1 259	919	845	1 086	1 086	808
Total returns.....	\$ 9 024	\$11 047	\$13 460	\$13 481	\$13 116	\$17 770	\$13 901	\$13 901
Net returns.....	670	1 846	1 857	1 998	4 285	2 769	4 015	3 515
Rate earned on investment, percent.....	12.1	17.3	13.4	14.6	24.7	15.1	19.8	19.3
Labor and management earnings.....	\$ 2 091	\$ 3 200	\$ 3 308	\$ 3 397	\$ 5 625	\$ 4 161	\$ 5 385	\$ 4 955
Gross earnings per acre.....	51.39	78.24	47.02	53.50	55.99	53.84	50.96	42.10
Gross expense per acre.....	30.32	52.33	30.93	35.76	26.85	37.36	29.00	23.34
Net earnings per acre.....	\$ 12.07	\$ 25.91	\$ 16.09	\$ 17.74	\$ 29.14	\$ 16.48	\$ 21.96	\$ 18.76
Land use								
Percent of land area tillable.....	86.0	85.7	81.9	83.3	88.1	78.3	77.9	83.5
Percent of tillable land in:								
Corn.....	21.6	27.5	25.1	21.9	22.8	19.9	22.5	20.1
Soybeans.....	10.5	4.0	11.6	11.6	13.5	10.9	8.5	15.2
Oats.....	8.0	9.2	9.2	10.8	8.6	8.8	10.1	9.0
Wheat.....	25.5	17.9	25.1	21.7	30.0	23.8	25.9	27.6
Hay and pasture.....	31.3	39.1	25.5	31.4	22.8	29.5	25.2	25.2
Other crops.....	3.1	2.3	3.5	3.2	2.3	7.1	3.5	2.9
Expense factors								
Labor cost per crop acre.....	\$ 25.99	\$ 33.00	\$ 20.94	\$ 21.52	\$ 15.96	\$ 16.59	\$ 18.41	\$ 14.26
Machinery and power cost per crop acre.....	17.48	23.74	15.59	19.10	12.38	16.57	13.78	13.78
Building cost per acre.....	2.60	3.92	2.24	1.99	1.80	1.64	1.75	1.30

TABLE 13.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS
IN FARMING-TYPE AREAS 7 AND 8, 1948

Items	Acres per farm					
	60 to 139		140 to 219		220 to 299	
	Livestock farms	Grain farms	Livestock farms	Grain farms	Livestock farms	Grain farms
Number of farms.....	18	18	34	10	31	20
Acres per farm.....	115	179	181	267	253	411
Inputs (cost items).....						
Buildings and improvements.....	\$ 401	\$ 534	\$ 559	\$ 657	\$ 756	\$ 722
Machinery and power.....	1 097	1 600	1 584	2 204	2 053	2 888
Labor.....	1 690	1 720	1 916	2 357	2 029	2 716
Taxes.....	142	194	205	227	246	368
Miscellaneous.....	94	56	99	113	111	108
Capital charge.....	618	789	830	1 117	1 106	1 317
Feed fed to productive livestock.....	3 102	2 159	4 068	3 423	4 588	3 299
Total inputs.....	\$ 7 353	\$ 7 241	\$ 9 398	\$10 377	\$11 219	\$11 473
Returns (income items).....						
AAA and miscellaneous.....	53	84	86	105	92	136
Labor and machinery.....	23	212	208	205	95	292
Crop returns.....	2 939	6 323	4 255	9 333	5 387	10 246
Livestock returns.....						
Cattle—including dairy products.....	1 897	850	1 958	1 944	2 682	1 961
Hogs.....	1 721	1 422	2 765	2 116	3 322	2 051
Sheep.....	38	107	55	80	230	90
Poultry.....	1 078	857	1 273	771	790	814
Total returns.....	\$ 7 789	\$ 9 855	\$10 600	\$14 554	\$12 598	\$15 590
Net returns.....	436	2 614	1 202	4 177	1 379	4 117
Rate earned on investment, percent.....	8.53	21.56	12.25	23.70	11.23	20.63
Labor and management earnings.....	\$ 1 748	\$ 3 913	\$ 2 523	\$ 5 529	\$ 2 564	\$ 5 498
Gross earnings per acre.....	42.21	41.76	34.49	40.67	30.66	29.05
Gross expense per acre.....	33.02	22.77	23.25	20.81	20.85	15.82
Net earnings per acre.....	\$ 9.19	\$ 18.99	\$ 11.24	\$ 19.86	\$ 9.81	\$ 13.23
Land use.....						
Percent of land area tillable.....	84.2	87.5	79.0	82.3	82.8	81.3
Percent of tillable land in:						
Corn.....	26.9	26.7	26.9	23.3	23.3	18.9
Soybeans.....	8.9	21.7	10.9	20.5	18.9	18.0
Wheat.....	6.5	4.2	5.7	6.4	6.4	9.9
Oats.....	12.0	21.7	15.9	18.4	17.1	15.7
Hay and pasture.....	37.9	23.5	35.7	28.7	38.6	31.3
Other crops.....	7.2	2.2	3.9	3.4	4.2	5.8
Expense factors.....						
Labor cost per crop acre.....	\$ 24.82	\$ 13.08	\$ 18.54	\$ 13.87	\$ 14.20	\$ 10.10
Machinery and power cost per crop acre.....	16.11	12.39	14.87	12.97	14.36	9.62
Building cost per acre.....	1.82	.89	1.02	1.04	1.30	.86
						1.14

Area Grouping of Farm Bureau Farm Management Service Records

Data presented in the following tables (Tables 14-17) were taken from Farm Bureau Farm Management Service records. Area grouping of these records does not follow the conventional farming type area lines because the analysis of these records was based on size and type separations to be used for all counties in the Farm Bureau Farm Management Service. Since division of records by Farming-Type Areas was not required in the report, the records were grouped by areas determined by other considerations. Geographical location as well as the predominance of types of farming practiced by cooperating farmers were the bases for four area groupings. The counties included in these area groupings are as follows:

<i>General Farming</i>	<i>Cash Grain</i>	<i>Livestock and Grain</i>	<i>Dairy</i>
Adams	Champaign	Bureau	Boone
Brown	Coles	Carroll	Cook
Cass	DeWitt	DeKalb	DuPage
Clark	Douglas	Henderson	Grundy
Fulton	Edgar	Henry	Jo Daviess
Mason	Ford	Knox	Kane
Menard	Iroquois	LaSalle	Kendall
Morgan	Kankakee	Lee	Lake
Pike	Livingston	McDonough	McHenry
Sangamon	Logan	Marshall-Putnam	Stephenson
Schuyler	McLean	Mercer	Will
	Macon	Ogle	Winnebago
	Moultrie	Peoria	
	Piatt	Rock Island	
	Tazewell	Stark	
	Vermilion	Warren	
	Woodford	Whiteside	

TABLE 14.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE DAIRY AREA, 1948

Items		Under 180 acres		180 to 259 acres	
		Dairy farms	Hog farms	Dairy farms	Hog farms
Number of farms.....	1	57	17	39	20
Average size of farm.....	2	140	147	211	220
Soil rating on improved land.....	3	3.6	3.2	4.1	3.1
Inputs per farm:					
Land improvements.....	4	\$ 316	\$ 315	\$ 391	\$ 509
Buildings and fences.....	5	971	780	1 118	1 267
Machinery and power.....	6	2 735	2 303	3 176	3 262
Labor.....	7	3 094	2 299	3 593	3 552
Taxes.....	8	389	367	492	523
Miscellaneous.....	9	459	287	506	396
Capital charge.....	10	1 743	1 892	2 152	2 940
Total non-feed input.....	11	(9 707)	(8 243)	(11 428)	(12 449)
Feed fed to:					
Sheep.....	12	\$ 14	\$ 53	\$ 129	\$ 158
Poultry.....	13	726	809	787	803
Dairy cattle.....	14	5 143	808	6 429	1 436
Other cattle.....	15	89	2 371	44	2 433
Hogs.....	16	1 864	7 133	2 575	9 251
Total feed fed.....	17	(7 836)	(11 174)	(9 964)	(14 081)
Total farm inputs.....	18	17 543	19 417	21 392	26 530
Total inputs per acre.....	19	125.02	132.09	101.45	120.82
Returns per farm:					
AAA, buildings and miscellaneous.....	20	\$ 140	\$ 75	\$ 129	\$ 218
Labor and machinery.....	21	168	110	361	815
Crop returns.....	22	6 358	8 431	8 066	12 332
Returns from:					
Sheep.....	23	\$ 20	\$ 120	\$ 70	\$ 99
Poultry.....	24	978	1 011	919	1 055
Dairy cattle.....	25	9 402	1 470	10 953	3 247
Other cattle.....	26	71	3 521	35	3 820
Hogs.....	27	2 373	9 645	3 072	10 842
All livestock.....	28	(12 844)	(15 767)	(15 049)	(19 063)
Total farm returns.....	29	19 510	24 383	23 605	32 428
Net returns per farm.....	30	\$ 1 967	\$ 4 966	\$ 2 213	\$ 5 898
Net returns per \$100 non-feed input.....	31	20	60	19	47
Cash balance per farm.....	32	\$ 4 324	\$ 7 470	\$ 5 394	\$ 9 947
Inventory increase.....	33	984	882	618	777
Farm products consumed.....	34	500	487	543	536
Less unpaid labor.....	35	2 098	1 981	2 190	2 422
Net farm earnings.....	36	\$ 3 710	\$ 6 858	\$ 4 365	\$ 8 838
Net earnings per acre.....	37	26.44	46.65	20.70	40.25
Rate earned on investment, percent.....	38	10.66	18.13	10.14	15.03
Total investment per acre.....	39	\$ 248	\$ 257	\$ 204	\$ 268
Selected farm operating costs:					
Hired labor charge.....	40	\$ 996	\$ 318	\$ 1 402	\$ 1 130
Labor cost per crop acre.....	41	32.46	21.10	28.90	21.23
Machinery hire.....	42	311	471	392	301
Machinery repairs and maintenance.....	43	647	468	754	923
Gasoline, fuel and oil.....	44	495	424	621	694
Machinery depreciation.....	45	753	536	900	946
Power and machinery cost per crop acre.....	46	28.69	21.14	25.55	19.50
Crop acres per farm.....	47	95	109	124	167
Months of labor per farm.....	48	20.7	15.5	23.8	23.7
Percent land area tillable.....	49	85.4	85.7	72.4	86.7
Percent tillable land in:					
Corn and grain silage.....	50	35.1	45.2	36.6	46.2
Soybeans.....	51	1.8	2.2	.3	3.5
Small grains.....	52	23.8	26.9	25.4	27.0
Hay and pasture.....	53	39.3	25.6	37.6	23.3
Biennial and perennial legumes.....	54	33.2	23.7	31.8	20.7
Crop yields per acre:					
Corn, bushels.....	55	67.5	78.3	64.9	76.3
Soybeans, bushels.....	56	25.6	33.0	18.9	29.4
Oats, bushels.....	57	63.2	68.1	65.5	64.8
Wheat, bushels.....	58	35.0	18.0	21.4	32.4
Crop returns per tillable acre.....	59	\$ 51.99	\$ 66.23	\$ 51.11	\$ 63.59
Feed fed per tillable acre.....	60	65.36	88.74	65.30	73.97

TABLE 15.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE CASH GRAIN AREA, 1948

	Under 180 acres		180 to 259 acres		260 to 339 acres		340 to 499 acres	
	Grain farms	Hog farms	Grain farms	Hog farms	Grain farms	Hog farms	Grain farms	Hog farms
1	51	59	106	56	77	35	62	21
2	152	148	225	220	303	296	401	381
3	2.5	2.4	2.2	2.5	2.2	2.7	2.4	2.9
4	\$ 341	\$ 281	\$ 424	\$ 416	\$ 421	\$ 530	\$ 638	\$ 716
5	499	588	590	847	634	1 242	948	1 264
6	2 141	2 370	2 745	3 045	3 462	4 012	4 320	4 624
7	2 008	2 241	2 599	2 894	3 094	3 643	3 734	4 244
8	388	439	596	565	764	735	942	873
9	144	257	198	327	231	458	273	432
10	1 822	2 015	2 562	2 730	3 351	3 647	4 105	4 311
11	(7 343)	(8 191)	(9 714)	(10 824)	(11 957)	(14 267)	(14 960)	(16 464)
12	\$ 79	\$ 119	\$ 74	\$ 71	\$ 29	\$ 539	\$ 101	\$ 266
13	387	710	523	511	533	518	632	448
14	310	567	544	848	589	816	512	566
15	425	804	778	1 341	926	3 158	1 631	3 952
16	1 174	6 141	1 566	7 002	2 434	11 503	2 289	12 170
17	(2 375)	(8 341)	(3 485)	(9 773)	(4 511)	(16 534)	(5 165)	(17 402)
18	9 718	16 532	13 199	20 597	16 468	30 801	20 125	33 866
19	64.02	111.46	58.54	93.54	54.29	104.11	50.13	88.98
20	\$ 80	\$ 147	\$ 113	\$ 120	\$ 124	\$ 245	\$ 150	\$ 235
21	251	262	252	201	361	290	470	251
22	8 229	8 175	12 856	11 478	16 846	15 662	22 043	19 387
23	92	141	63	86	51	635	91	177
24	548	1 029	748	679	664	661	831	713
25	568	1 044	1 031	1 553	955	1 441	781	776
26	793	1 287	1 121	2 136	1 452	4 202	2 432	5 384
27	1 523	8 061	2 012	9 056	3 040	14 332	2 926	14 623
28	(3 524)	(11 562)	(4 975)	(13 510)	(6 162)	(21 271)	(7 061)	(21 673)
29	12 084	20 146	18 196	25 309	23 493	37 468	29 724	41 546
30	\$ 2 366	\$ 3 614	\$ 4 997	\$ 4 712	\$ 7 025	\$ 6 667	\$ 9 599	\$ 7 680
31	32	44	51	44	59	47	64	47
32	\$ 3 961	\$ 5 987	\$ 7 145	\$ 7 236	\$10 437	\$10 850	\$11 338	\$10 779
33	1 758	1 178	1 951	1 717	1 538	1 179	3 925	2 870
34	297	453	427	425	439	450	493	463
35	1 828	1 990	1 964	1 936	2 038	2 164	2 051	2 121
36	\$ 4 188	\$ 5 628	\$ 7 559	\$ 7 442	\$10 376	\$10 315	\$13 705	\$11 991
37	27.59	37.94	33.52	33.80	34.21	34.86	34.14	31.50
38	11.49	13.97	14.75	13.63	15.48	14.14	16.69	13.91
39	\$ 240	\$ 272	\$ 227	\$ 248	\$ 221	\$ 247	\$ 205	\$ 227
40	\$ 181	\$ 252	\$ 635	\$ 957	\$ 1 056	\$ 1 478	\$ 1 682	\$ 2 123
41	15.93	19.76	13.85	16.97	12.25	15.92	11.19	15.52
42	312	301	340	411	366	493	1 206	553
43	500	547	699	812	929	1 149	421	1 288
44	434	479	617	627	823	889	1 103	1 149
45	589	690	752	866	974	1 166	1 208	1 196
46	16.99	20.89	14.63	17.86	13.71	17.53	12.95	16.91
47	126	113	188	170	253	229	334	274
48	13.3	15.0	18.0	19.6	21.3	24.0	24.9	26.1
49	93.5	91.0	93.4	91.7	93.0	90.2	90.9	83.0
50	42.3	47.0	42.7	42.1	42.3	43.4	41.3	47.3
51	14.8	4.7	17.5	11.8	18.9	10.1	20.3	9.0
52	25.6	24.2	22.9	23.4	24.0	22.8	24.6	23.7
53	16.2	23.0	16.4	22.3	14.2	22.8	13.2	19.2
54	12.7	21.6	13.3	19.2	11.4	18.6	10.4	16.6
55	74.5	79.2	77.2	76.0	75.3	77.8	73.8	73.6
56	27.8	29.5	28.1	26.7	27.2	26.3	27.2	27.2
57	48.3	49.6	49.7	46.0	46.7	44.6	45.3	47.9
58	31.5	28.7	32.6	29.5	33.6	30.7	31.7	36.1
59	\$ 57.93	\$ 60.28	\$ 60.94	\$ 56.43	\$ 59.56	\$ 58.11	\$ 59.86	\$ 60.65
60	16.74	61.79	16.55	48.38	16.00	61.94	14.15	55.11

TABLE 16.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE LIVESTOCK AND GRAIN AREA, 1948

Items		Under 180 acres			
		Grain farms	Hog farms	Dairy farms	Mixed livestock
Number of farms.....	1	21	127	33	22
Average size of farm.....	2	152	143	145	147
Soil rating on improved land.....	3	2.6	2.9	3.1	2.9
Inputs per farm:					
Land improvements.....	4	\$ 289	\$ 300	\$ 280	\$ 346
Buildings and fences.....	5	620	881	835	758
Machinery and power.....	6	2 123	2 454	2 396	2 329
Labor.....	7	2 159	2 514	2 664	2 407
Taxes.....	8	393	369	359	318
Miscellaneous.....	9	176	359	377	276
Capital charge.....	10	1 793	1 940	1 827	2 141
Total non-feed input.....	11	(7 553)	(8 817)	(8 738)	(8 575)
Feed fed to:					
Sheep.....	12	\$ 55	\$ 64	\$ 28	\$ 298
Poultry.....	13	505	596	611	916
Dairy cattle.....	14	672	704	3 533	858
Other cattle.....	15	241	1 725	793	3 233
Hogs.....	16	1 501	7 511	2 072	3 965
Total feed fed.....	17	(2 974)	(10 600)	(7 037)	(9 270)
Total farm inputs.....	18	10 527	19 417	15 775	17 845
Total inputs per acre.....	19	69.36	135.74	109.06	121.04
Returns per farm:					
AAA, buildings and miscellaneous.....	20	\$ 101	\$ 96	\$ 91	\$ 100
Labor and machinery.....	21	200	202	278	353
Crop returns.....	22	8 886	7 635	6 865	8 053
Returns from:					
Sheep.....	23	\$ 121	\$ 70	\$ 61	\$ 254
Poultry.....	24	694	814	795	1 157
Dairy cattle.....	25	1 485	1 273	6 358	1 530
Other cattle.....	26	423	2 505	1 040	4 382
Hogs.....	27	1 809	9 917	5 176	5 176
All livestock.....	28	(4 532)	(14 579)	(10 759)	(12 499)
Total farm returns.....	29	13 719	22 512	17 993	21 005
Net returns per farm.....	30	\$ 3 192	\$ 3 095	\$ 2 218	\$ 3 160
Net returns per \$100 non-feed input.....	31	42	35	25	37
Cash balance per farm.....	32	\$ 5 048	\$ 5 156	\$ 4 228	\$ 7 540
Inventory increase.....	33	1 516	1 478	1 488	-882
Farm products consumed.....	34	367	474	490	596
Less unpaid labor.....	35	1 946	2 075	2 161	1 953
Net farm earnings.....	36	\$ 4 985	\$ 5 033	\$ 4 045	\$ 5 301
Net earnings per acre.....	37	13.90	12.98	11.07	35.95
Rate earned on investment, percent.....	38	32.84	35.19	27.96	12.38
Total investment per acre.....	39	\$ 236	\$ 271	\$ 253	\$ 290
Selected farm operating costs:					
Hired labor charge.....	40	\$ 213	\$ 440	\$ 503	\$ 454
Labor cost per crop acre.....	41	17.85	23.40	27.01	22.09
Machinery hire.....	42	226	315	276	323
Machinery repairs and maintenance.....	43	559	642	538	617
Gasoline, fuel and oil.....	44	438	478	416	417
Machinery depreciation.....	45	565	684	676	693
Power and machinery cost per crop acre.....	46	17.55	22.84	24.29	21.37
Crop acres per farm.....	47	121	107	99	109
Months of labor per farm.....	48	14.5	16.9	18.2	16.5
Percent land area tillable.....	49	92.9	88.8	85.1	89.7
Percent tillable land in:					
Corn and grain silage.....	50	45.6	46.1	41.7	43.6
Soybeans.....	51	4.4	2.6	2.0	2.3
Small grains.....	52	29.1	25.6	22.5	26.5
Hay and pasture.....	53	20.9	25.6	33.7	27.6
Biennial and perennial legumes.....	54	19.0	22.6	30.7	24.3
Crop yields per acre:					
Corn, bushels.....	55	71.8	77.4	69.2	75.5
Soybeans, bushels.....	56	27.8	29.2	31.2	31.8
Oats, bushels.....	57	61.4	60.0	62.8	62.5
Wheat, bushels.....	58	34.9	31.6	...	27.6
Crop returns per tillable acre.....	59	\$ 62.97	\$ 59.59	\$ 54.89	\$ 60.62
Feed fed per tillable acre.....	60	21.10	83.49	57.18	70.10

TABLE 16.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE LIVESTOCK AND GRAIN AREA, 1948 (CONTINUED)

	180 to 259 acres				260 to 339 acres			
	Grain farms	Hog farms	Beef cattle farms	Mixed livestock	Grain farms	Hog farms	Beef cattle farms	Mixed livestock
1	29	111	23	21	25	62	24	13
2	219	218	220	220	301	303	301	299
3	2.3	2.7	2.6	2.9	2.2	2.6	2.4	2.5
4	\$ 486	\$ 385	\$ 560	\$ 431	\$ 542	\$ 542	\$ 534	\$ 504
5	863	1 010	1 687	1 081	1 084	1 315	1 657	1 037
6	2 796	3 020	3 620	2 655	3 272	3 832	4 334	3 714
7	2 466	3 096	3 471	3 208	3 320	3 743	4 362	4 155
8	451	537	521	488	697	720	795	714
9	212	413	364	372	230	476	472	431
10	2 461	2 726	3 527	2 760	3 488	3 648	4 768	3 713
11	(9 735)	(11 187)	(13 750)	(10 995)	(12 633)	(14 276)	(16 922)	(14 268)
12	\$ 127	\$ 111	\$ 118	\$ 244	\$ 63	\$ 143	\$ 128	\$ 216
13	446	486	579	667	350	499	491	1 001
14	310	860	1 170	1 276	565	590	484	757
15	645	2 324	11 132	4 615	1 475	3 506	17 405	6 460
16	2 292	9 570	5 081	4 872	2 447	11 259	8 112	6 543
17	(3 820)	(13 351)	(17 080)	(11 674)	(4 900)	(15 997)	(26 620)	(14 977)
18	13 555	24 538	30 830	22 669	17 533	30 273	43 542	29 245
19	61.79	112.46	140.05	103.24	58.25	99.80	144.68	97.84
20	\$ 148	\$ 157	\$ 141	\$ 149	\$ 190	\$ 156	\$ 151	\$ 242
21	212	249	336	224	257	345	382	351
22	12 775	11 311	14 650	11 531	18 104	15 424	16 060	16 461
23	\$ 174	\$ 102	\$ 59	\$ 178	\$ 160	\$ 127	\$ 131	\$ 229
24	551	618	703	896	509	640	591	1 400
25	568	1 628	292	2 698	1 130	980	687	1 339
26	885	3 229	13 121	7 100	2 434	4 762	22 880	8 796
27	3 234	12 751	7 848	6 184	3 824	14 741	10 806	9 122
28	(5 412)	(18 328)	(22 023)	(17 056)	(8 057)	(21 250)	(35 095)	(20 886)
29	18 547	30 045	37 150	28 960	26 608	37 175	51 688	37 940
30	\$ 4 992	\$ 5 507	\$ 6 320	\$ 6 291	\$ 9 075	\$ 6 902	\$ 8 146	\$ 8 695
31	51	49	46	57	72	48	48	61
32	\$ 5 948	\$ 7 966	\$ 5 607	\$ 9 186	\$11 396	\$10 850	\$ 8 930	\$ 8 920
33	3 057	1 830	6 032	1 615	2 996	1 387	5 921	5 327
34	327	477	438	521	427	574	588	584
35	1 880	2 040	2 230	2 271	2 256	2 262	2 525	2 423
36	\$ 7 452	\$ 8 233	\$ 9 847	\$ 9 051	\$12 563	\$10 549	\$12 914	\$12 408
37	33.97	37.73	44.73	41.22	41.74	34.78	42.91	41.51
38	15.14	15.10	13.96	16.40	18.01	14.46	13.54	16.71
39	\$ 224	\$ 250	\$ 320	\$ 251	\$ 232	\$ 240	\$ 317	\$ 248
40	\$ 586	\$ 1 056	\$ 1 240	\$ 937	\$ 1 064	\$ 1 481	\$ 1 838	\$ 1 733
41	13.63	19.43	20.71	20.14	13.17	17.31	20.04	18.89
42	416	370	402	307	367	425	380	353
43	673	791	886	695	723	1 128	1 127	986
44	594	634	795	575	816	841	1 025	825
45	774	854	1 097	706	1 044	1 242	1 364	1 119
46	15.44	18.95	21.60	16.66	12.98	17.72	19.91	16.88
47	181	159	168	159	252	216	218	220
48	16.8	20.6	22.7	20.8	21.9	25.0	27.9	27.4
49	91.0	86.1	90.1	86.8	92.1	82.7	86.2	85.4
50	48.4	46.2	45.0	41.9	48.2	46.5	44.8	42.4
51	7.9	3.4	3.7	3.9	9.2	5.1	3.9	4.8
52	28.1	26.3	25.7	26.6	27.4	26.4	23.8	28.2
53	15.7	23.7	24.4	27.3	14.6	22.0	27.4	23.2
54	14.2	19.4	23.8	24.7	13.0	18.3	23.1	19.3
55	72.5	74.9	79.4	74.5	74.9	77.5	74.9	78.7
56	26.7	26.5	30.5	26.0	29.2	30.0	32.7	29.2
57	58.2	58.0	75.6	61.5	53.7	55.7	68.6	60.0
58	27.6	26.0	...	29.8	31.3	29.8	20.0	22.1
59	\$ 63.73	\$ 59.54	\$ 73.21	\$ 59.70	\$ 65.12	\$ 60.66	\$ 61.16	\$ 63.21
60	19.13	71.10	86.11	61.28	17.68	63.78	102.61	58.69

TABLE 16.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE LIVESTOCK AND GRAIN AREA, 1948 (CONCLUDED)

Items	340 to 499 acres			Over 500 acres
	Grain farms	Hog farms	Beef cattle farms	Hog farms
Number of farms.....	1 21	50	28	20
Average size of farm.....	2 414	397	389	608
Soil rating on improved land.....	3 2.7	2.7	2.9	3.1
Inputs per farm:				
Land improvements.....	4 \$ 935	\$ 583	\$ 606	\$ 822
Buildings and fences.....	5 1 216	1 549	1 968	2 089
Machinery and power.....	6 5 082	4 631	4 851	6 490
Labor.....	7 4 675	4 826	4 574	5 671
Taxes.....	8 850	896	812	1 271
Miscellaneous.....	9 264	503	540	661
Capital charge.....	10 4 122	4 445	4 725	5 920
Total non-feed input.....	11 (17 144)	(17 433)	(18 076)	(22 924)
Feed fed to:				
Sheep.....	12 \$ 30	\$ 145	\$ 185	\$ 477
Poultry.....	13 354	414	451	434
Dairy cattle.....	14 705	773	252	1 039
Other cattle.....	15 2 058	5 685	13 404	7 041
Hogs.....	16 3 783	12 723	6 427	18 313
Total feed fed.....	17 (6 930)	(19 740)	(20 721)	(27 304)
Total farm inputs.....	18 24 074	37 173	38 797	50 228
Total inputs per acre.....	19 58.20	93.58	99.72	82.57
Returns per farm:				
AAA, buildings and miscellaneous.....	20 \$ 201	\$ 252	\$ 195	\$ 284
Labor and machinery.....	21 549	559	335	342
Crop returns.....	22 23 142	19 120	19 188	23 128
Returns from:				
Sheep.....	23 \$ 47	\$ 259	\$ 268	\$ 109
Poultry.....	24 404	510	613	470
Dairy cattle.....	25 1 389	1 158	457	1 368
Other cattle.....	26 2 761	7 692	17 495	11 903
Hogs.....	27 5 218	16 005	8 332	24 041
All livestock.....	28 (9 819)	(25 624)	(27 165)	(37 891)
Total farm returns.....	29 33 711	45 555	46 883	61 645
Net returns per farm.....	30 \$ 9 637	\$ 8 382	\$ 8 086	\$11 417
Net returns per \$100 non-feed input.....	31 56	48	45	50
Cash balance per farm.....	32 \$ 9 239	\$ 9 469	\$ 7 838	\$17 240
Inventory increase.....	33 7 072	4 894	6 843	1 854
Farm products consumed.....	34 402	602	622	729
Less unpaid labor.....	35 2 954	2 139	2 491	2 486
Net farm earnings.....	36 \$13 759	\$12 826	\$12 812	\$17 337
Net earnings per acre.....	37 33.26	32.29	32.93	28.50
Rate earned on investment, percent.....	38 16.69	14.43	13.56	14.64
Total investment per acre.....	39 \$ 199	\$ 224	\$ 243	\$ 195
Selected farm operating costs:				
Hired labor charge.....	40 \$ 1 722	\$ 2 687	\$ 2 083	\$ 3 216
Labor cost per crop acre.....	41 13.29	17.26	17.44	14.78
Machinery hire.....	42 632	380	638	690
Machinery repairs and maintenance.....	43 1 349	1 441	1 375	1 986
Gasoline, fuel and oil.....	44 1 267	1 057	1 117	1 408
Machinery depreciation.....	45 1 354	1 335	1 388	1 740
Power and machinery cost per crop acre.....	46 14.45	16.56	18.50	16.92
Crop acres per farm.....	47 352	280	262	384
Months of labor per farm.....	48 30.8	30.8	28.7	36.4
Percent land area tillable.....	49 89.7	82.1	79.4	73.3
Percent tillable land in:				
Corn and grain silage.....	50 50.6	45.0	41.4	37.5
Soybeans.....	51 12.3	5.6	4.3	9.7
Small grains.....	52 25.6	26.4	28.6	29.4
Hay and pasture.....	53 9.9	22.7	25.0	23.4
Biennial and perennial legumes.....	54 8.0	19.7	21.5	17.4
Crop yields per acre:				
Corn, bushels.....	55 67.1	77.3	71.0	69.6
Soybeans, bushels.....	56 27.3	28.6	24.6	28.5
Oats, bushels.....	57 61.3	55.3	59.1	52.1
Wheat, bushels.....	58 26.1	30.0	34.8	23.9
Crop returns per tillable acre.....	59 \$ 62.11	\$ 57.75	\$ 60.73	\$ 50.18
Feed fed per tillable acre.....	60 18.68	60.51	67.10	61.21

TABLE 17.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE GENERAL FARMING AREA, 1948

	Under 180 acres		180 to 259 acres		260 to 339 acres		340 to 499 acres	
		Hog farms	Grain farms	Hog farms	Grain farms	Hog farms	Grain farms	Hog farms
1		11	19	27	15	23	15	17
2		147	223	220	298	302	425	386
3		4.3	3.8	4.8	3.4	4.1	4.3	4.3
4		\$ 284	\$ 387	\$ 357	\$ 676	\$ 546	\$ 909	\$ 758
5		640	600	540	515	763	1 079	1 041
6		2 313	2 589	2 869	3 015	3 285	4 026	4 107
7		2 609	2 534	2 837	3 081	3 757	4 023	3 970
8		378	455	410	641	642	857	762
9		325	227	279	175	335	232	399
10		1 443	1 873	1 776	2 549	2 744	3 382	3 392
11		(7 992)	(8 665)	(9 068)	(10 652)	(12 072)	(14 508)	(14 429)
12		\$ 55	\$ 28	\$ 30	\$ 16	\$ 174	\$ 23	\$ 56
13		560	414	583	549	384	515	525
14		292	430	701	365	442	239	815
15		1 069	737	762	862	2 282	1 818	2 102
16		7 060	1 983	6 311	1 516	9 496	2 969	11 847
17		(9 036)	(3 592)	(8 387)	(3 308)	(12 778)	(5 564)	(15 345)
18		17 028	12 257	17 455	13 960	24 850	20 072	29 774
19		115.49	54.96	79.44	46.90	82.24	47.20	77.05
20		\$ 131	\$ 128	\$ 97	\$ 123	\$ 88	\$ 177	\$ 213
21		269	323	295	182	398	349	191
22		7 747	11 189	9 145	15 429	11 684	19 164	15 060
23		\$ 131	\$ 59	\$ 33	\$ 11	\$ 169	\$ 59	\$ 77
24		659	484	696	602	493	626	524
25		505	537	1 140	678	569	301	1 223
26		1 477	1 348	1 151	1 441	3 297	2 772	3 571
27		10 276	2 882	8 478	2 186	12 495	4 521	14 791
28		(13 048)	(5 310)	(11 498)	(4 918)	(17 023)	(8 279)	(20 186)
29		21 195	16 950	21 035	20 652	29 193	27 969	35 650
30		\$ 4 167	\$ 4 693	\$ 3 580	\$ 6 692	\$ 4 343	\$ 7 897	\$ 5 876
31		52	54	39	63	36	54	41
32		\$ 4 624	\$ 5 452	\$ 5 357	\$10 282	\$ 7 401	\$12 081	\$12 882
33		2 659	2 639	1 777	636	1 504	1 082	— 1 567
34		454	436	486	449	468	441	614
35		2 127	1 961	2 263	2 125	2 286	2 325	2 661
36		\$ 5 611	\$ 6 566	\$ 5 357	\$ 9 242	\$ 7 087	\$11 279	\$ 9 268
37		38.06	29.44	24.38	31.05	23.45	26.52	23.98
38		19.44	17.53	15.08	17.89	12.92	16.67	13.66
39		\$ 196	\$ 168	\$ 162	\$ 174	\$ 182	\$ 159	\$ 176
40		\$ 482	\$ 572	\$ 573	\$ 955	\$ 1 471	\$ 1 697	\$ 1 310
41		25.26	14.10	18.98	13.94	20.02	12.85	15.29
42		247	446	346	294	388	489	373
43		553	685	781	902	934	1 148	1 163
44		443	558	542	778	747	1 039	941
45		851	802	847	862	948	1 300	1 243
46		22.39	14.41	19.19	13.64	17.50	12.86	15.81
47		103	180	149	221	188	313	260
48		17.9	17.5	19.0	21.5	25.6	26.0	27.8
49		81.9	89.3	79.9	85.9	74.5	85.1	78.6
50		40.4	36.1	36.4	38.2	36.1	32.2	36.4
51		11.5	19.9	12.9	19.0	15.3	17.1	13.8
52		28.6	27.4	29.2	25.8	25.7	29.4	28.1
53		19.5	16.1	20.9	16.4	22.5	18.4	21.5
54		15.7	11.0	14.7	11.7	15.9	15.5	17.6
55		90.3	70.9	73.0	74.9	73.4	72.1	71.1
56		31.5	27.1	27.0	30.2	29.4	29.1	29.2
57		38.5	39.5	33.2	42.8	46.0	35.2	41.4
58		33.7	31.2	26.0	34.4	26.7	31.8	25.0
59		\$ 63.23	\$ 55.85	\$ 51.10	\$ 60.00	\$ 50.45	\$ 52.34	\$ 48.38
60		74.85	18.04	47.76	12.94	56.74	15.38	50.56



Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. ⁹ Same as footnote 1. ¹⁰ Federal Reserve Bulletin of Federal Reserve Board. ¹¹ Preliminary estimate. ¹² Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹³ Monthly prices refer to baled hay. Annual data refer to loose hay.

H. P. Rusk

Director, Extension Service in
Agriculture and Home Economics

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TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production ¹⁰
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-39	
1933.....	82	67	57	94	67	68	75	69	54	69
1934.....	93	86	76	100	79	73	74	80	70	75
1935.....	99	104	102	101	89	86	85	86	80	87
1936.....	100	107	105	100	105	109	110	101	93	103
1937.....	107	113	118	104	111	116	112	107	111	113
1938.....	98	91	90	98	96	107	109	100	85	89
1939.....	96	86	84	97	99	107	110	107	100	109
1940.....	97	89	89	98	105	114	116	115	114	125
1941.....	108	108	112	103	140	146	140	138	168	162
1942.....	123	138	141	117	193	200	169	176	245	199
1943.....	128	162	165	127	244	241	190	217	334	239
1944.....	129	163	165	132	255	240	182	242	346	236
1945.....	132	168	171	136	270	248	182	250	293	203
1946.....	150	195	204	151	308	302	200	255	266	170
1947.....	189	238	265	181	377	386	213	279	324	187
1948.....	205	248	274	195	390	383	197	303	365	192
1948 July....	209	257	294	196	404	479	245	306	360	186
Aug.....	210	252	289	196	409	329	168	309	375	191
Sept.....	210	250	285	195	471	333	171	311	382	192
Oct.....	205	241	255	195	558	550	282	310	383	195
Nov.....	203	238	239	193	497	443	229	310	379	195
Dec.....	201	233	237	194	411	410	211	311	378	192
1949 Jan.....	199	227	231	194	356	388	200	310	363	191
Feb.....	196	221	219	191	266	303	158	308	358	189
Mar.....	196	226	226	192	293	346	180	308	350	184
Apr.....	195	224	224	192	275	321	167	309	336	179
May.....	193	225	220	191	288	309	162	310	329	174
June.....	192	222	221	191	306	328	172	308	...	169
July.....	190	218	217	191	326	366	192	307	...	162

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			Aug. 1948	Current months, 1949		
	1935-39	1947	1948		June	July	Aug.
Corn, bu.....	\$.66	\$1.90	\$1.89	\$1.91	\$1.21	\$1.25	\$1.14
Oats, bu.....	.31	.97	.94	.66	.57	.54	.55
Wheat, bu.....	.86	2.45	2.23	2.04	1.85	1.77	1.74
Barley, bu.....	.62	1.59	1.58	1.25	.90	.90	1.00
Soybeans, bu.....	.90	3.28	3.20	3.05	2.10	2.32	2.65
Hogs, cwt.....	8.52	24.50	23.73	27.30	19.30	18.70	19.50
Beef cattle, cwt.....	7.88	20.48	24.63	27.20	22.70	22.00	22.00
Lambs, cwt.....	8.36	21.31	23.44	25.60	24.80	23.30	21.90
Milk cows, head.....	58.00	173.33	194.17	200.00	195.00	190.00	195.00
Veal calves, cwt.....	8.66	23.08	26.74	27.30	24.80	24.10	25.00
Sheep, cwt.....	3.58	7.39	8.93	9.50	8.40	8.00	8.00
Butterfat, lb.....	.27	.69	.73	.74	.55	.56	.57
Milk, cwt.....	1.63	3.95	4.49	4.70	3.00	3.15	3.35
Eggs, doz.....	.19	.41	.42	.40	.40	.38	.41
Chicken, lb.....	.15	.27	.30	.34	.28	.25	.25
Wool, lb.....	.25	.42	.42	.44	.42	.43	.42
Apples, bu.....	1.08	2.72	2.33	2.25	3.05	2.00	1.35
Hay, ton ¹³	9.39	16.88	20.64	22.10	20.50	19.50	21.00
Potatoes, bu.....	.91	1.91	2.00	2.00	2.05	2.00	1.80

¹³ For sources of data in tables see preceding page.

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Articles in This Issue

	PAGE
A Suggested Method for Adjusting Chicago Premiums to Keep Milk Production in Line with Sales of Milk and Cream — R. W. BARTLETT.....	901
Establishing a Long-Range Farm Policy — H. C. M. CASE.....	905
Farm Storage of Soybeans Carries Small Price Risk — T. A. HIERONYMUS and G. L. JORDAN.....	910
Illinois Laws Affecting Poultry and Egg Production — N. G. P. KRAUSZ.....	915

A SUGGESTED METHOD FOR ADJUSTING CHICAGO PREMIUMS TO KEEP MILK PRODUCTION IN LINE WITH SALES OF MILK AND CREAM

During the past few years milk production in the Chicago milkshed has increased much faster than sales of market milk and cream. This has come about as a result of more producers and higher production per farm, and a major decrease in milk sales to areas outside of Chicago.

Since September 1947 the following premiums above the basic formula price have been paid for milk and cream in the Chicago market:

	<i>Market milk</i>	<i>Cream</i>
August to November.....	\$.90	\$.50
December to April and July.....	.70	.40
May and June.....	.50	.30

Recent studies indicate the need for adjusting these premiums if production is to be kept in line with sales of market milk and cream. Before setting forth how this might be done, some facts pertinent to this problem are reviewed.

Population. The population of the Chicago marketing area, including both metropolitan Chicago and the suburban markets, increased from 4,826,000 in 1940 to 5,710,000 (estimated) in 1949, a net increase of 18.3 percent (Figure 1).

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

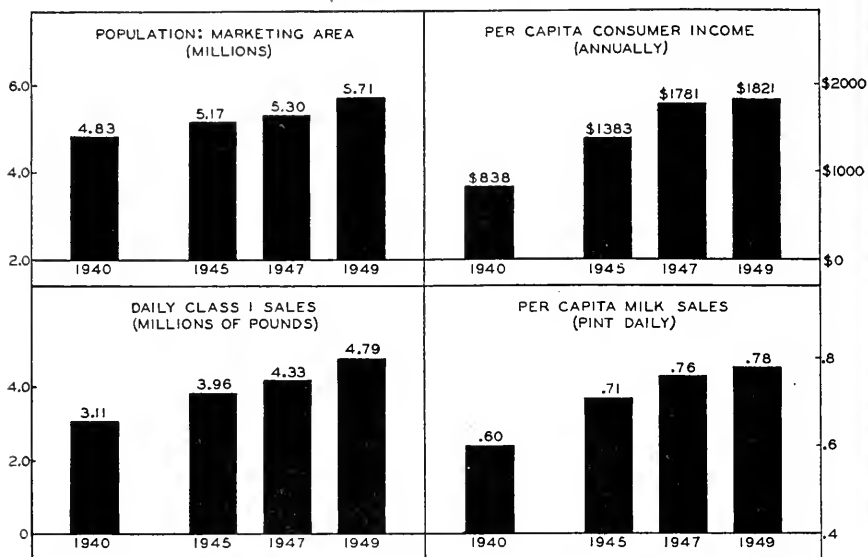


FIGURE 1.—CHANGES IN POPULATION, CONSUMER INCOME, CLASS I SALES AND PER CAPITA CONSUMPTION IN THE CHICAGO METROPOLITAN AREA, 1940, 1945, 1947, AND 1949

Per capita consumer income. Consumer income in Chicago increased from \$838 per person¹ in 1940 to \$1,821 in 1949, a net increase of 117 percent.

Daily Class I sales and per capita consumption of milk. Increases in consumer income combined with population increases have resulted in large increases in sales of Class I milk in the Chicago market. Sales of Class I milk increased from 3,110,000 pounds daily in 1940 to an estimated volume of 4,790,000 pounds daily in 1949,² a net increase of 54 percent.

Per capita sales of milk increased from .60 pint daily in 1940 to .78 pint in 1949, a net increase of 30 percent.

Changes in number of producers. In 1940 there was an average of 16,838 producers in the Chicago milkshed according to the Federal Milk Market Administration. By 1949 this had increased to 20,856, a net increase of 4,018, or 24 percent. In 1949 there were 2,303 more producers in the milkshed than in 1947. See Figure 2.

Average production per farm. The average deliveries of producers increased from 333 pounds per farm in 1940 to 443 pounds in 1949, a net increase of 33 percent.

¹ Based upon Sales Management.

² Data for 1949 estimated on the basis of the first seven months.

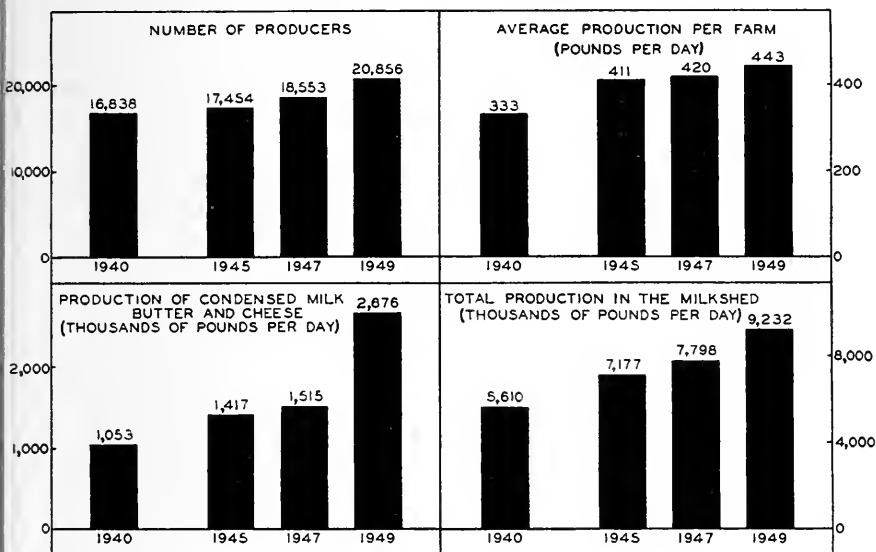


FIGURE 2. — CHANGES IN NUMBER OF PRODUCERS, PRODUCTION PER FARM, PRODUCTION OF MANUFACTURED MILK, AND TOTAL PRODUCTION IN THE CHICAGO MILKSHED, 1940, 1945, 1947, AND 1949

Total production in the milkshed. The combined result of a 24 percent increase in the number of producers and a 33 percent increase in the daily production per producer has resulted in a large increase in total milk production in the Chicago milkshed. The average production increased from 5,610,000 pounds of milk per day in 1940 to 9,232,000 pounds in 1949, a net increase of 65 percent.

Production of condensed milk, butter, and cheese. Increases in milk production in the Chicago milkshed have been far greater than in sales of market milk and cream, particularly during the past two years. This has resulted in a large increase in Grade A milk manufactured into condensed milk, butter, cheese, and dried whole milk. The volume of manufactured milk in 1940 averaged 1,053,000 pounds per day. By 1949, this had increased to 2,676,000 pounds daily, or over 2½ times that of 1940.

Why has Chicago production of Grade A milk increased so much? Increases in volume of Grade A milk coming to the Chicago market in recent years may be attributed primarily to:

- (1) High blend prices for market milk compared with prices of manufacturing milk and feed prices.

- (2) Loss of eastern markets which have encouraged midwestern Grade A producers to sell milk on the Chicago market.
- (3) Use of a market-wide pool which has encouraged some handlers to buy more milk than has been necessary to meet their sales of milk and cream.

Chicago market milk prices compared with condensery prices. In 1948 the net blend price in the Chicago milkshed averaged 58 cents per 100 pounds more than the condensery pay price, or the net difference was 15 cents higher than the 25-year average (1920-1944) of 43 cents per 100 pounds. In 1949 it is estimated that the premium will be 56 cents, or 13 cents above the 25-year average. The wide difference between market milk prices and manufacturing prices has been the most important factor encouraging more producers to higher production per farm in the Chicago market. Low feed prices in 1949 have also encouraged higher milk production.

During World War II many midwestern farmers sold milk to eastern buyers. Loss of eastern markets has encouraged some of these shippers to sell milk in the Chicago market.

Under an individual handler pool, if a dealer buys more milk than he can use as market milk or cream this results in a lower blend price for his producers. In a market-wide pool, if a dealer buys a large additional volume of milk that is manufactured this is pooled with that of all other handlers and all producers in the market receive a lower price. The use of a market-wide pool in Chicago has been a factor causing increased milk production in this milkshed. From this fact one should not infer that it would be desirable to do away with the market-wide pool. Rather, it suggests the need of some method to prevent loading this pool with more milk than is necessary to meet market needs.

A method of getting flexible premiums for Class I milk. The following method for adjusting premiums above the Class I formula price, based upon production and sales records during the 12 months before each premium period, is suggested:

- (1) Assume that total production in each premium period should be 115 percent of Class I and Class II sales in that period to provide a necessary reserve.
- (2) If production falls below 115 percent of sales in any premium period add one-half cent per 100 pounds for each percent that it falls below the 115 percent.
- (3) If production exceeds 115 percent of sales in any premium period subtract one-half cent per 100 pounds for each percent that it exceeds the 115 percent.

Applying the above methods to Chicago's production and sales in the

premium periods of the most recent 12 months, we would get the following when total production was divided by the sum of Class I and Class II sales.

(Millions of pounds)

(1) August to November $(855.0 \div 750.8) \times 100 = 114\%$

(2) December to April and July . . $(1688.0 \div 1162.1) \times 100 = 145\%$

(3) May and June $(686.2 \div 450.4) \times 100 = 152\%$

August to November. With an actual production of 114 percent above sales and a needed production of 115 percent, there would be a net difference of one percent. At one-half cent for each percent, this would add one cent (rounded) to the present premium of 90 cents and make a total of 91 cents for this period.

December to April and July. Production in this period was 145 percent of sales or 30 percent more than the needed production of 115 percent. At one-half cent for each percent this would reduce the premium 15 cents ($30 \times \frac{1}{2}$ cent) per 100 pounds from the existing premium of 70 cents, leaving a net of 55 cents per 100 pounds for this period.

May and June. Production in May and June was 152 percent of sales or 37 percent above the 115 percent needed. At one-half cent for each percent this would reduce the premium 18 cents from the present premium of 50 cents, leaving a net of 32 cents per 100 pounds for this period.

Class II prices. Under the present order the following premiums above the basic formula price were paid for Class II milk: August to November, 50 cents; December to April and July, 40 cents; and May and June, 30 cents per 100 pounds of milk. In line with the suggested adjustments in Class I premiums, it is suggested that the Class II premium from December to April and July be reduced to 30 cents and in May and June to 20 cents per 100 pounds of milk.

Effect of adjusted premiums on blend price to farmers. Had the adjusted premium shown above been in effect from August 1949 to July 1949, the blend price to producers would have been reduced 8.2 cents per 100 pounds of milk. Over a fourth of the total milk produced was utilized in manufactured outlets which would not be affected by the suggested adjustments in premiums.

R. W. BARTLETT

ESTABLISHING A LONG-RANGE FARM POLICY

What do farmers want in a farm program? A prominent farm leader has stated briefly that farmers want a fair opportunity to earn enough to enable their families to live comfortably, to enjoy in moderate

degree the better things of life, to become educated according to modern standards, and to attain a measure of security for their old age. Farm people generally will agree with this goal, but they will differ on the policies for attaining such a goal.

Farmers want some form of price assurance based on the parity principle. They want to produce abundantly making use of new technological developments and research. They want a good domestic market for their products and favor expansion of foreign trade as an outlet for surplus agricultural products. Farmers are generally in favor of government programs which promote soil conservation and proper land use. Also, they want price supports but generally do not want to give up their freedom to operate their farms as they choose. Such wants are frequently expressed without full consideration of many facts that form a basis for sound policy decisions.

What are some of the facts that we must consider in formulating agricultural policy? The relationship of agriculture to the rest of our economy is continually changing. In 1790 we were a nation of four million inhabitants with ninety percent engaged in agriculture. From this beginning we have advanced to a great industrial nation with only 17.9 percent of our 145 million people engaged in agriculture. More than eighty percent of our people have been released to produce other goods and render other services. This gradual decline in numbers of people engaged in farming has raised our standard of living. This creates a situation which makes farmers more dependent upon the industrial part of our economy. Agricultural policies like all governmental policies need to be developed for the common good.

With such a small percentage of our people engaged in agriculture, do we have the ability to produce food for our growing population? Our total farm output has increased by more than two-thirds since 1910. During World War I, food production increased by one-sixth over the prewar years; during World War II, food production increased one-third over 1935-1939 levels. In eight of the past twelve years, total grain production was higher than in any previous year. In five years, production of livestock exceeded any previous year. In eight years, total food output exceeded all previous years and for the past six years it has averaged thirty-six percent above the 1935-1939 average. If weather conditions remain favorable future production is expected to exceed prewar levels.

What are the factors responsible for such immense increases in agricultural production? Historically agricultural production has followed an upward trend. An abundant supply of land was our chief national asset less than a century ago. Expansion of water and rail trans-

portation hastened land settlement and made possible moving agricultural products to eastern markets and into export trade. Farm machinery development played a major role in releasing people from agriculture for other employment. More than 30,000,000 immigrants, since 1850, contributed mightily to our economic development.

Our cropland increased from 188 million acres in 1880 to 402 million acres in 1920. Little change has occurred since that time. Increased production is due to a change in land use and a larger output per acre.

Since 1918, the shift from horses to machine power has released 55 million acres from production of feed for work stock to food and fiber production for human use. By 1965, it is expected that another 15 to 20 million acres will be released. Another illustration of changes in land use is the increased production of soybeans and other intensive food crops since 1920.

Looking to the future, many of the crop increases of recent years have been attained at the expense of lowering the soil fertility reserve. Improved practices and land use will be necessary to further increase production or maintain present high production. Continued use of commercial fertilizers and rotations with higher proportions of forage crops will help solve this problem by increasing livestock numbers to consume the additional production of forage. There are many technological developments which will contribute to increased agricultural production and employing a smaller proportion of workers. Machinery is a good example. Up until World War I agriculture was changing from a hand to a machine industry. Investment in farm machinery totaled 150 million dollars in 1850 as compared with 3.6 billion in 1920 and 5.1 billion in 1945. Machinery is credited with saving sixty to ninety-five percent of the hand labor in growing and harvesting our staple grain crops and cotton.

What will be the demand for food by our own population? Our recent population growth has exceeded all expectations. The next census will find our population approaching 150 million. Continued large increases are expected during the next 25 years. By 1975, conservative estimates indicate the population may reach 175 million or an increase of about sixteen percent. Sustained high employment would favor rapid growth in population and would maintain a high demand for food products.

Will domestic consumption of food be great enough to use all that we produce? At the present time, 60 million people are gainfully employed. Per capita consumption of food has increased about fifteen percent since the beginning of the war. When employment is high, food consumption increases, but the reverse is also true.

With high production and high employment food consumption was twenty-one percent higher per capita in 1946 than in 1932. The latter was a period of heavy unemployment. Consumption of dairy products excluding butter increased forty-four percent and fruit and vegetable production averaged twenty-nine percent higher. Per capita food consumption by the civilian population was at its peak in 1946 but it now shows some decline.

Over-all food production has increased thirty-six percent since 1940. Per capita consumption increased fifteen percent, and population increased about ten percent. This leaves about ten percent increase to be disposed of by some other means.

During the past year, meat consumption has decreased seven pounds per capita. Twenty million bushels of corn are required to produce one pound of meat per capita. The farmer is vitally interested in maintaining a high consumption of animal products. Insofar as the consumption of meat and other animal products can be increased, it affords the most promising means of using part of the corn crop which is creating a storage problem in many areas at the present time.

What part do exports have in our food production? Until 1921, we exported one-third of our wheat crop. During the past 30 years international trade has declined due to trade competition between countries, tariffs, and efforts toward self-sufficiency by importing countries. During the twenties, agricultural exports were stable from year to year although below wartime levels. During the thirties, exports declined rapidly, the dollar value shrinking more than the physical volume. Our agricultural exports about equalled our imports for 15 years preceding World War II. The emergency food exports of 1946 and 1947 raised export values to a peak of thirteen or fourteen percent of farm cash receipts but the downward trend in agricultural exports is likely to be resumed as the European food crisis lessens. The future market for our farm products in Europe will depend upon the prosperity of those countries, competition of other areas and their ability to buy our products.

How serious is our grain surplus problem? Surpluses of food are a much more significant problem than a surplus of manufactured goods. A slowdown of industrial output can be accomplished in a very short time. Agricultural production is planned for a year at a time and sometimes years in advance. Adjustments in production must come slowly. Increases in food consumption do not expand as easily as the purchases of industrial goods in periods of prosperity.

We must maintain a market for our production if agriculture is to prosper. Estimates indicate that after the 1949 corn harvest is complete, we will have about 4.2 billion bushels of corn on hand. In only one year has our consumption greatly exceeded three billion bushels. In 1943,

3.2 billion bushels were used to help produce a record pig crop of 122 million. On the average, 2.5 billion bushels have been fed to livestock. Around 400 million bushels has been our normal industrial use so that three billion would appear to be an ample estimate of consumption for the coming year.

Thus a corn surplus of one billion bushels by next fall seems probable, unless measures can be devised to increase consumption or export. The most logical way to increase corn consumption is to increase livestock production since livestock have ordinarily used eighty-five percent of our corn crop. Whether or not farmers will rapidly increase the feeding of corn when they can get ninety percent of parity without doing the work and taking the risk of raising livestock is a question.

What is the consumer reaction to high food prices? Consumers generally feel their demand for meat and other animal products has not been met at times in recent years partly because of high prices. The high price for many products reflects exports and high consumption on the part of those with good incomes. Consumers, however, are very responsive to the cost of food in relation to their own income. A study of milk consumption in nine eastern cities with a population of 24 million people has shown an eleven percent drop in milk consumption from 1945-1948. The price of Class I milk has been held at a high level in that area. At nine midwest markets, the delivered price had fallen 4.4 cents below the eastern markets. Consumption here, however, has been maintained.

In Champaign-Urbana, milk sales have shown a definite response to price changes. In 1948, a differential of two cents per quart was established between home delivered milk and retail store sales. Later this increased to two and one-half cents when milk was sold at the stores in two quart containers. Sales increased from 1,200 to 20,000 quarts daily in eight retail stores since the differential went into effect.

What are some of the problems in setting up a farm program at this time? Since the war we have reached a peak in domestic food consumption in this country. The growing surpluses in this country are not a true picture of the world food situation. For the year 1948-1949 we exported 580,000,000 bushels of grain. International cooperation in planning for the use and consumption of agricultural products is a factor of major interest to farmers. The problem of surplus production is of major concern. In planning policies for agriculture, many questions need to be answered. Do high supports on basic commodities discourage production of other products for which there is a better demand? Are there ways of increasing consumption or changing our pattern of production to decrease present surpluses? Are there any new uses for agricultural products that we have overlooked? How can we keep surpluses from

depressing market prices? Will it be possible to find new channels to increase our export trade? What provision should be made for an ever normal granary? Will acreage controls of basic crops lead to overproduction of other products grown on land kept out of production of basic crops? These are only a few of the problems which must be answered in developing a long-range farm policy.

Finally the measure of success of any farm policy is the degree to which the level of living of farmers and consumers alike is improved by the policies put into effect.

H. C. M. CASE

FARM STORAGE OF SOYBEANS CARRIES SMALL PRICE RISK

For the next few years the farm storage of soybeans is likely to prove profitable. There are special reasons why the above statement can be made, although we should hesitate to make a similar statement with regard to wheat, corn, or oats. In addition to the seven-cent storage allowance paid to producers for soybeans placed under loan and not redeemed and for soybeans delivered to Commodity Credit Corporation under a purchase agreement, the character of the market for soybeans tends to cause rather large increases in price between harvest time and the following spring or summer. The rise from November to May is likely to be substantial, except in years of severe economic collapse.

Ignoring the war years when price ceilings were in effect, there was a substantial rise in Illinois farm prices of soybeans from October to May every year for 25 years, except in 1948-49. For the period 1925-26 to 1940-41, the average increase in price was almost 39 percent; for 1930-31 to 1940-41, the increase averaged 40 percent and for the period 1935-36 to 1940-41 it averaged 38 percent. For the three years 1946-47 to 1948-49 inclusive, the rise averaged 15 percent. The rises of 28 percent in 1946-47 and 21 percent in 1947-48 were partly offset by a decline of five percent in 1948-49. Considering the fact that prices of farm commodities have been adjusting to a lower level since the inflationary spurt after the war ended, the soybean price record is remarkable.

In recent years there has been a tendency for a large fraction of the seasonal rise to occur by mid-January. This may be a temporary phenomenon. Certainly the February drops of the past two years need not be recurring events.

Explanation of the Soybean Seasonal

The standard explanation of a usual seasonal increase in the price of grains is best illustrated by the concept of a normal carrying charge.

Grain is harvested during a short period of the year and consumed at a fairly even rate during all twelve months. Supplies must be carried forward from one harvest to the beginning of the next. Carrying grain forward involves certain costs, generally considered as the cost of storage, insurance, and interest on funds tied up in grain ownership. That is, because of carrying costs, corn is actually worth more in May than in November. For example, if the price of corn in November is \$1.25 per bushel and the cost of carrying is $1\frac{1}{2}$ cents per month, then it may be expected that on the average the price of cash corn will advance by nine cents per bushel between November and May and be worth \$1.34 per bushel in the latter month.

The exactness of the seasonal increase is, in individual years, hidden by the larger price changes caused by unusual changes in supply and overall changes in demand such as are reflected in the general price level. The usual seasonal increase resulting from the carrying cost does not occur in all years but tends to exist if we consider the price change over an average of several years. Nor is the carrying cost the same amount in all years. The interest cost varies with the value of the grain; interest cost is higher if corn is worth two dollars per bushel than if it is worth one dollar. In some years there is an abundance of storage available and the price of storage is low, while in years of large supplies the price of storage may be very high.

One explanation advanced for the unusually large seasonal increase in the price of soybeans has been that soybean storage was inadequate during the fall months and that the price of storage has been high. Soybeans move onto the market at harvest in such large quantities that it is difficult to find storage for them. It is now argued that because soybean processors have been rapidly building additional storage space, the large premiums on soybean storage will disappear and the seasonal increase in the price of soybeans will decline to more ordinary levels.

We do not agree with this standard explanation and expectation of the soybean seasonal. First of all, soybean processors have been able to rent all of the storage they needed for a maximum of $7\frac{1}{2}$ cents per bushel for six months. Including interest and insurance the carrying cost has not been more than nine cents. This does not explain the large average seasonal increase.

Soybean processors' buying practices. Soybean processors, as a group, are willing to pay up to within 30 cents per bushel of as much for soybeans as they can get for the oil and meal made from a bushel of soybeans. In deciding the price they will bid at country points, they take the combined value of 48 pounds of soybean meal, bulk, Decatur, Illinois, and nine pounds of soybean oil in tank cars, mid-western mills, and sub-

tract 30 cents from it. For example, if soybean oil is 15 cents per pound and soybean meal \$70 per ton ($3\frac{1}{2}$ cents per pound) the combined value is \$3.18 per bushel. Up to \$2.88 will be bid for soybeans.

The prices of soybeans and soybean products are extremely erratic, changing frequently and by considerable amounts. If a soybean processor were to buy soybeans at one time and sell the products at some later time he might realize the expected 30 cents, or he might realize less or more than 30 cents. In order that they not be subjected to risks of price change, soybean processors attempt to protect themselves by selling oil and meal for delivery at a later time or by hedging in soybean futures. Soybean processors carry relatively small inventories of soybeans unprotected against price change. They use the sale of oil and meal for deferred delivery, or forward sale, almost exclusively.

TABLE 1.—CURRENT MONTH PRICES AND PRICES ACTUALLY RECEIVED
BY PROCESSORS FOR SOYBEAN OIL AND MEAL, 1947-48

	Current month oil price	Actual oil price	Current month meal price	Actual meal price
	Cents per pound		Dollars per ton	
September (new crop).....	19.90	19.52	94.75	86.09
October.....	20.60	19.08	84.00	80.66
November.....	25.00	22.62	84.75	81.39
December.....	26.30	24.09	92.25	86.17
January.....	26.75	24.37	100.00	93.55
February.....	20.10	19.11	76.00	75.86
March.....	21.20	20.03	75.00	76.62
April.....	24.00	23.34	77.50	77.59
May.....	26.00	24.72	77.56	77.86
June.....	27.00	25.14	84.55	85.81
July.....	22.30	22.13	86.90	86.79
August.....	21.85	21.83	73.10	73.10
September (old crop).....	22.20	22.20	73.70	73.70

Forward sales are made to oil refiners in the case of oil and to feed ingredient wholesalers and feed manufacturers in the case of meal. While oil refiners, feed wholesalers, and feed manufacturers are more willing to assume risks of price change than are soybean processors, they will not carry, without reward, more risks than are necessary. Accordingly, the practice of offering discounts for accepting deferred delivery has arisen.

The distance forward that sales must be made to cover risks is appreciable. Farmers have sold, in the past, a high proportion of their soybeans before and during harvest. In 1947 they had sold 73 percent of the crop by December first and 80 percent by January first. On January 1, 1949, they owned about 25 percent of the 1948 crop. It seems, then, that to get soybeans to crush processors must buy enough soybeans at harvest to keep their plants busy for nine months. Accordingly, sale contracts call

for delivery one to nine months after the sale is made. The average sale must be at least five months forward. Some sales, meal in particular, are made for as much as 12 months forward.

The prices on deferred delivery oil and meal are made at lower prices than those made for immediate delivery. Processors are willing to take discounts in order to shift risks and the buyers of oil and meal must be offered discounts to induce them to take additional risks. Buyers of oil and meal cannot shift the risks acquired when they buy forward. The size of the discounts varies with the length of time to delivery, the relative level of prices, and from year to year.

In Table 1 we have shown the prices of oil and meal for immediate delivery and the prices at which 1947 crop oil and meal actually sold from September 1947 to September 1948. The column labeled "Current month oil price" refers to spot prices for the month indicated. The column labeled "Actual oil price" refers to prices actually received by processors for all oil sold during the specified month, including spot sales and forward sales. Weighted by the quantities sold in each month, the average discount on oil was 1.83 cents per pound. The weighted average discount on meal was \$4.04 per ton. These discounts amount to 14.64 cents and 9.70 cents per bushel of soybeans or a total of 24.34 cents per bushel. That is, processors had to pay, during 1947-48, an average of 24.34 cents per bushel to get someone else to carry their market risks in soybeans.

In calculating the prices they will bid for farmers' soybeans processors use the discounted prices that they actually receive, thus taking the cost of shifting risks out of the farm price. Interestingly it costs about as much to get someone to carry risks as it does to process soybeans. The data in Table 1 show that the premiums are greatest in the fall months and eventually disappear. They decline as the time to delivery decreases. Accordingly, those farmers who sell soybeans in the fall pay much larger risk premiums than those who sell soybeans in the spring.

On the basis of this risk shifting system with its discounted prices we suggest that risk premiums explain the unusually large seasonal movement of soybean prices. It arises out of ownership considerations rather than storage factors.

Some examples. During October 1947, oil sold spot for an average of 20.50 cents per pound and meal for an average of \$84 per ton. The combined oil and meal value of a bushel of soybeans was \$3.86. During the same month oil for delivery in April sold for 18.25 cents per pound and meal for delivery in April sold for \$78 per ton. The combined value for April delivery was \$3.54. The premium for carrying the risk from October to April was 32 cents per bushel.

On September 24, 1948, October delivery oil sold for 18 cents and February delivery for 15.5 cents. On the same day meal for October delivery sold for \$52 and February for \$49. The gross values of soybeans were \$2.87 and \$2.57 respectively. The risk premium was 30 cents per bushel.

On September 29, 1949, October delivery oil sold for 10 cents and February delivery for 9½ cents. On the same day meal for October delivery sold for \$64.25 and February delivery for \$60.25, the gross values of soybeans were \$2.44 and \$2.31. The risk premium was 13 cents per bushel.

Soybean inventories must be carried unprotected to realize the risk premiums. In addition to the risk premiums there may be gains from increases in prices or losses from declines in prices, which must be considered in addition to the premium. We noted earlier that the size of the risk premium varies with the relative level of prices. Soybean oil is very low in price and the trade seems to feel there is not much risk of its going lower. This factor explains the relatively small risk premium this year.

The future of risk premiums. Two factors will tend to reduce the size of risk premiums below the 1947-48 and 1948-49 levels. First, as prices stabilize and postwar adjustments are completed the ownership of soybean products will tend to be judged less risky. Estimates of risk are made largely on the basis of the level of prices as compared to some past "normal" and on the amount of past fluctuation.

Second, the risk premiums for soybean ownership are much larger than for corn, oats, and wheat because the number of persons eligible for risk assumption is much more limited. There are no satisfactory hedging markets for soybeans, soybean oil, and soybean meal but the soybean futures market is improving rapidly. As hedging facilities continue to improve the risk premium will decline. It may be expected that the decline will be gradual and not very rapid.

Possible Collapse in Demand Versus Usual Seasonal Price Rise

For most grains the average seasonal variation is small when compared with the price movements caused by changes in domestic or foreign demand and supply factors. Soybean prices are also greatly affected by actual or anticipated changes in demand and the May to September prices are also affected by prospective changes in supplies of soybeans and competing products. By October the supplies of beans and competing products are fairly accurately predicted by government agencies so the dominant price-making forces are changes in demand and the harvest-time discounts resulting from the methods processors use to shift risks.

Although the recent devaluation of European currencies tends to depress world prices of fats and oils and the low corn prices resulting from a bumper crop tend to depress soybean meal prices, any resulting price weakness should show up soon. This would still permit a seasonal rise in price. If a continuation of the deflation of prices of farm products occurs the November to May rise would be reduced or eliminated.

Government officials suggest that we shall have large supplies of fats and oil for export but that there is a need for these supplies. Efforts are being made to facilitate exports early in the crop year to help relieve the market at the time farmers market most of their beans. Such a program would tend to narrow the seasonal price spread. So would larger storage operations by farmers. But as the authors see the picture, the farmer is likely to be well paid for holding his beans until January or later at least four times out of five for several years to come.

If the market price is below the loan price at harvest time the farmer can get a government loan and storage fee. If the market price is above the loan price the forces that have tended to cause such wide seasonal price rises in the past are likely to be effective, although probably on a slightly diminishing scale.

T. A. HIERONYMUS and G. L. JORDAN

ILLINOIS LAWS AFFECTING POULTRY AND EGG PRODUCTION

Even though milk is generally conceded to be our most important food, some would certainly argue the point of whether milk or poultry and eggs were more universally used. Milk has been thoroughly regimented and regulated by both state and federal governments. By comparison, poultry and eggs have received little attention from the legislators. Probably the public interest isn't as seriously affected by a rotten egg as it is by a quart of diseased milk.

However, there are many laws in the Illinois statutes on poultry and eggs that need to be read and understood. The following is a brief summary of such laws.

Poultry

In 1921 a state board of poultry husbandry was created to encourage the poultry industry in various ways including publications on poultry husbandry, exhibits at state fairs, farmers' institute meetings, egg laying contests throughout the state, and by providing lecturers and instructors for farmers' institutes. This program was placed under the direction of the State Department of Agriculture and remains there today.

Live poultry dealers in Illinois are required to have a license from the Department of Agriculture. Separate licenses must be obtained for each place of business and for each motor vehicle used in the purchase of or trading of live market poultry. Every person who buys live market poultry or who trades or exchanges goods, wares, or merchandise of any character or articles of any value for live market poultry is deemed to be in the business of dealing or trading in live market poultry. The fee for the license is very low (\$1) and is effective for one year. The constitutionality of this act was challenged before the Illinois Supreme Court in 1907 but this court held that the general assembly may require a license to pursue any calling.

In addition to the license, live poultry dealers must keep a record of all transactions showing number, weight, breed, description, and other distinguishing marks of birds procured. The name, address, and brief description of the seller must also be recorded. It is difficult to say what is meant by a "brief description of the seller." Apparently no physical examinations are given. Fines of \$10 to \$100 may be imposed for failure to obtain a license or to keep records.

Another group of people who need a license to operate are commission merchants. This act was designed to protect further the producer and provides that every person or firm who receives or sells farm produce on commission shall be licensed by the Department of Agriculture. The license fee is \$10 and each such commission merchant must be bonded for \$2,000. Separate licenses and bonds are required for each location at which a business is conducted.

A recent act (1941) calls for licensing operators of community sales of livestock. Livestock as used in the act includes poultry. Such sales spread rapidly during 1940 to 1941 and many diseases were in this manner communicated to the purchaser's livestock. The act provides that each community sale shall be under the direct supervision of an accredited veterinarian approved by the Department of Agriculture. The veterinarian shall examine the livestock offered for sale and prohibit the sale of any animals which he thinks are diseased. The act does not apply to the business of buying or assembling livestock for shipment to a livestock market or packing house. The license fee is \$50 per year.

In view of the rather large amount of chicken rustling in the '20s plus the fact that many farmers found it advantageous to mark poultry for their own purposes, an act was passed in 1929 providing for identification marks or brands. Such marks or brands may be registered with the State Department of Agriculture upon payment of a \$1 fee.

To improve breeding flocks an act was passed in 1933 providing that

the Department of Agriculture may formulate plans and rules for the inspection, culling, and supervision of hatcheries and poultry flocks supplying eggs for hatching. It is a voluntary program and to date there are only about 250 cooperators in Illinois. Flocks and hatcheries are classified after an inspection by the Department of Agriculture.

Improvement may progress to the point where the farmer has such good poultry he wants premium prices. The question arises whether he can sell directly to the consumer in cities and villages. Most cities have ordinances requiring retail merchants, peddlers, and others to procure a license. But as long ago as 1872 the State Legislature decided that these ordinances should not apply to any farmer, fruit and vine grower, or gardener selling his fruit produce in any market — and they may sell any quantity. The law further provides that they may do so without paying any state, county, city tax or license fee, any law, city or town ordinance to the contrary notwithstanding. The courts have held that this exemption applies to farmers peddling their produce as well as to farmers retailing at a stand or other market place. But there are certain limitations: (1) streets, alleys, and public places must not be obstructed; (2) regulations in the interest of public health must be observed. There is some conflict as to what license a city may impose which it deems necessary in the interest of public health and welfare.

The Unemployment Compensation Act, passed in 1937 and amended in 1947, has an exemption for agricultural labor. Such labor includes services performed in connection with raising, feeding, caring for, and management of poultry. The term "farm" as used in the act includes poultry farms.

Questions frequently arise regarding liability for a trespass by poultry. One who allows his birds to go on the land of others may be held liable for damage caused. Any reasonable means may be employed to prevent poultry from causing damage to property. If an owner persists in not confining his poultry and they repeatedly frequent adjoining land they may be classified as a nuisance and an action maintained to enjoin further trespass.

Two provisions in the criminal law complete the legal picture of Illinois laws on poultry. One makes it a crime to mark, brand, alter, or deface the mark or brand of domestic fowl which is the property of another, with an intent to steal or to prevent identification by the owner. The other law prohibits the coloring of baby chicks or other fowl when they are disposed of by sale or gift as pets or novelties. The latter law was passed in 1945.

Eggs

An early law (1919) which has been recently amended (1946) relates to the handling and sale of eggs and the manufacture of egg products. This act defines as unfit for human food an egg that is "addled or moldy; that contains black rot, white rot, or a blood ring; that has an adherent yolk or a bloody or green white; that is incubated beyond the blood ring stage; or that consists wholly or in part of filthy, decomposed, or putrid substance." To help insure consumers that such eggs will not be offered for sale the following provisions are found in this law: (1) It is unlawful for any persons to sell, offer for sale, or have in his possession with intent to sell eggs that are unfit for human food. (2) Purchasers of eggs either for retail or wholesale disposal must candle all eggs offered to them. They must refuse to purchase unfit eggs and must dock producers offering such eggs for sale. Candling must be done in the presence of the producer if he so requests. (3) Unfit eggs except those with a putrid odor must be broken and rendered unfit for sale by denaturing. Accurate records of candling and dockage must be maintained by egg buyers. (4) Buyers of eggs for resale must have a license from the Department of Agriculture. Fees are \$1 and \$5 depending on the classification in which the buyer falls. (5) All cases of eggs offered to the retail trade must have a candling certificate placed upon the top flat of the case. (6) Egg breaking establishments offering egg whites or other egg preparation for sale must be licensed by the Department of Agriculture. (7) All eggs from other states which do not have candling laws must be candled by the first receiver and a certificate provided.

These provisions are a part of the State Pure Food Law and are administered by the State Department of Agriculture. An Illinois case (*Schoonover vs. McLaughlin*, 278 App. 197) interpreted this action as giving the Department of Agriculture wide discretion in determining whether one violating the act should be punished or given an opportunity to rectify mistakes. Therefore such discretion could not be controlled by the issuance of a writ of mandamus.

Cold storage of eggs for long periods isn't a serious problem at this time. Prices and consumption are high, but in 1917 to protect the consumer a cold storage act was passed which included eggs. This law (amended in 1941) makes it unlawful to sell any article of food held for one year or more in cold storage without notifying the purchaser by plainly marking the package "cold storage goods" or "refrigerated goods," except that fruits, vegetables, poultry, meat, and fish so stored may be sold as "frozen or frosted." The act also makes it unlawful to advertise as fresh any article of food which has been held in cold storage for 30 days or over. Penalties for violation of this act may not exceed \$100 for each offense.

Illinois has no grading law and most Illinois eggs are sold simply as eggs. However, the Food Standards Commission of Illinois has adopted certain standards for eggs. Grades run from A to D and each is defined in detail. A copy of these standards may be obtained from the Illinois Division of Foods and Dairies. Some eggs are sold using federal grades which are AA, A, B, and C. There is a requirement in the Pure Food Act that eggs sold to the retail trade must either (1) be candled at the point of distribution and a candling certificate be placed on the case; or (2) be graded by an official grader of the state or United States Department of Agriculture and a certificate placed in each case or carton. If the latter is done the eggs must be sold within five days after the certificate is attached.

The following general comments can be made about the Illinois laws on poultry and eggs:

1. A grading law is desirable for both poultry meat, and eggs. Marketing graded products would mean thousands of extra dollars in the pockets of Illinois farmers. To obtain a greater demand for graded eggs, a regulation or law requiring ungraded eggs to be stamped "ungraded" would certainly help. Minnesota has used such a regulation successfully for a number of years.

2. Many of the Illinois laws are ineffective due to non-use. This is probably a result of at least two factors: one, some of the laws are impractical; two, the State Department of Agriculture doesn't have adequate personnel to supervise and enforce the laws. Examples of the first factor are the technical and lengthy requirements for handlers of live poultry and the grading requirements for small local buyers. Grading should be done by country assemblers rather than by such local buyers.

3. A relatively small number of poultry-men are cooperating with the Department of Agriculture to improve breeding flocks. This work should be encouraged and extended.

N. G. P. KRAUSZ

Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. ⁹ Same as footnote 1. ¹⁰ Federal Reserve Bulletin of Federal Reserve Board. ¹¹ Preliminary estimate. ¹² Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹³ Monthly prices refer to baled hay. Annual data refer to loose hay.

H. P. Rusk

Director, Extension Service in
Agriculture and Home Economics

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TABLE A.—INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production ¹⁰
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-39
1933.....	82	67	57	94	67	68	75	69	54	69
1934.....	93	86	76	100	79	73	74	80	70	75
1935.....	99	104	102	101	89	86	85	86	80	87
1936.....	100	107	105	100	105	109	110	101	93	103
1937.....	107	113	118	104	111	116	112	107	111	113
1938.....	98	91	90	98	96	107	109	100	85	89
1939.....	96	86	84	97	99	107	110	107	100	109
1940.....	97	89	89	98	105	114	116	115	114	125
1941.....	108	108	112	103	140	146	140	138	168	162
1942.....	123	138	141	117	193	200	169	176	245	199
1943.....	128	162	165	127	244	241	190	217	334	239
1944.....	129	163	165	132	255	240	182	242	346	236
1945.....	132	168	171	136	270	248	182	250	293	203
1946.....	150	195	204	151	308	302	200	255	266	170
1947.....	189	238	265	181	377	386	213	279	324	187
1948.....	205	248	275	195	390	383	197	303	365	192
1948 Aug....	210	252	291	196	409	329	168	309	360	191
Sept.....	210	250	285	195	471	333	171	311	367	192
Oct.....	205	241	255	195	558	550	282	310	367	195
Nov.....	203	238	239	193	497	443	229	310	363	195
Dec.....	201	233	237	194	411	410	211	311	361	192
1949 Jan....	199	227	231	194	356	388	200	310	346	191
Feb.....	196	221	219	191	266	303	158	308	340	189
Mar.....	196	226	226	192	293	346	180	308	333	184
Apr.....	195	224	224	192	275	321	167	309	319	179
May.....	193	225	220	191	288	309	162	310	313	174
June.....	192	222	221	191	306	328	172	308	316	169
July.....	191	218	217	191	326	366	192	307	313	162
Aug.....	190	214	218	190	...	...	...	...	...	170

TABLE B.—PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			Sept. 1948	Current months, 1949		
	1935-39	1947	1948		July	Aug.	Sept.
Corn, bu.....	\$.66	\$1.90	\$1.89	\$1.79	\$1.25	\$1.14	\$1.15
Oats, bu.....	.31	.97	.91	.67	.54	.55	.59
Wheat, bu.....	.86	2.45	2.23	2.07	1.77	1.74	1.84
Barley, bu.....	.62	1.59	1.58	1.20	.90	1.00	.95
Soybeans, bu.....	.90	3.28	3.20	2.40	2.32	2.65	2.16
Hogs, cwt.....	8.52	24.50	23.73	27.90	18.70	19.50	20.00
Beef cattle, cwt.....	7.88	20.48	24.61	26.60	22.00	22.00	23.00
Lambs, cwt.....	8.36	21.31	23.44	24.20	23.30	21.90	22.90
Milk cows, head.....	58.00	173.33	194.17	205.00	190.00	195.00	200.00
Veal calves, cwt.....	8.66	23.08	26.62	26.20	24.10	25.00	26.00
Sheep, cwt.....	3.58	7.39	8.93	9.50	8.00	8.00	7.50
Butterfat, lb.....	.27	.69	.73	.68	.56	.57	.58
Milk, cwt.....	1.68	3.95	4.50	4.65	3.15	3.40	3.50
Eggs, doz.....	.19	.41	.42	.42	.38	.41	.47
Chickens, lb.....	.15	.27	.30	.34	.25	.25	.24
Wool, lb.....	.25	.42	.42	.42	.43	.42	.42
Apples, bu.....	1.08	2.72	2.33	2.25	2.00	1.35	1.25
Hay, ton ¹³	9.39	16.88	20.64	20.80	19.50	21.00	20.50
Potatoes, bu.....	.91	1.91	2.00	1.95	2.00	1.80	1.80

¹⁻¹³ For sources of data in tables see preceding page.

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ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS

College of Agriculture · University of Illinois · Department of Agricultural Economics

G. L. Jordan, Editor

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Articles in This Issue

	PAGE
Inflation, Deflation, or Steady Prices? — G. L. JORDAN.....	921
The Amounts of Feed Used to Produce 100 Pounds Liveweight of Animals or Its Equivalent of Milk on Farms of North-Central Illinois — M. L. MOSHER.....	926
Choosing a Market for Illinois Hogs — W. J. WILLS.....	927
Milk Marketing — A Discussion of Dean Milk Company V. City of Waukegan — H. W. HANNAH.....	930
Are Illinois Farmers Well Housed? — W. J. FOREMAN.....	932
The Processors Share of the Food Dollar — A. B. PAUL.....	935

INFLATION, DEFLATION, OR STEADY PRICES?

For our purposes let's define inflation as being such a large demand in relation to the total supply of goods and services coming on the market that prices of those goods and services as a group tend to rise. Deflation is the opposite — a demand so small that prices tend to fall.

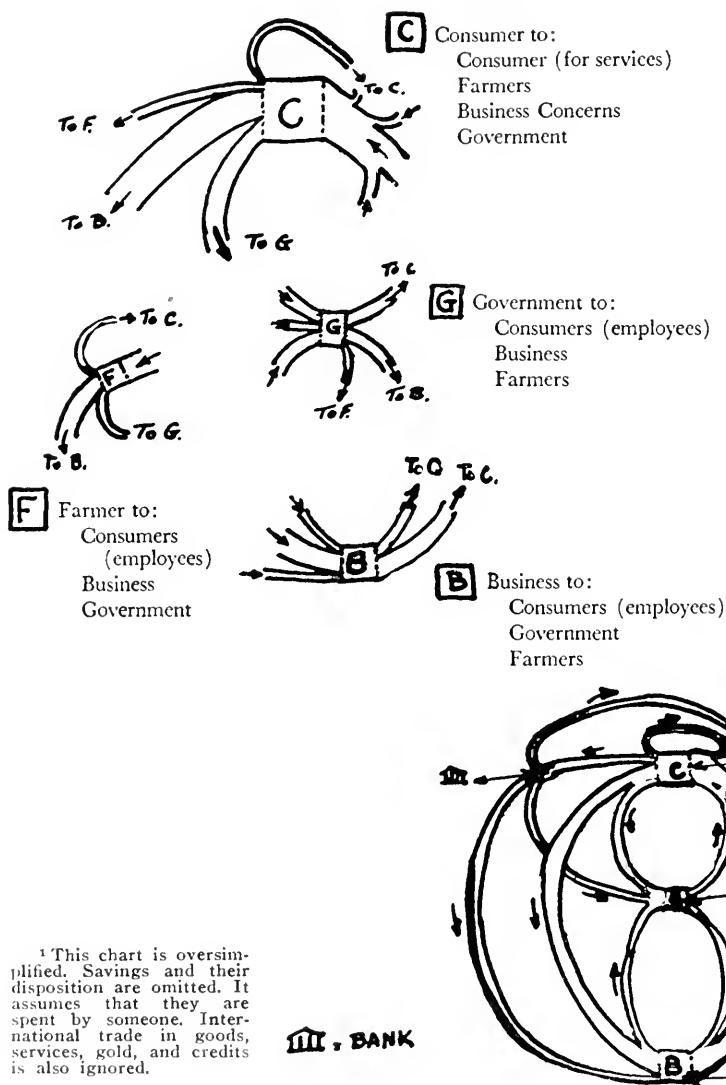
Since the end of the war farmers have been worried about the likelihood of deflation. They have seen prices of many farm products drop one-fourth, one-third, and even more, as in the case of eggs. Will prices go back to 1939 levels or, worse yet, back to 1932 levels? Other groups fear inflation. For them the question is, "Will the cost of living rise so that my savings, annuities, interest received, dividends, and, in case of my death, my life insurance will be worth considerably less in terms of the goods and services they will buy?"

Either inflation or deflation may occur. The most difficult job is to keep our economy going forward on an even keel.

The Flow of Incomes

The chart below illustrates the flow of incomes upon which the demand for farm products and for all other goods and services depends. So long as this flow is steady, as measured by its speed, and constant,

Articles in Illinois Farm Economics are based largely upon findings of the Agricultural Experiment Station.

THE DOMESTIC INCOME FLOW¹

Starting with a given level of personal income, consumers spend their money for services of others, for food provided by farmers, for housing and goods provided by businesses, or for taxes. Their savings may be used by insurance companies, or governments, or loaned to other "spenders" by banks.

Farmers, businessmen, and governments receive income and spend the money as indicated in the chart. It is assumed that their savings, if any, are also used by someone.

Minor items and the flow of goods and services, and gold in international commerce are omitted to simplify the illustration.

as measured by the quantity of money being used, the demand remains constant. Price changes then will depend on the quantity of goods and services coming on the market—the greater the quantity the lower the price per unit.

Quantity changes. We are now producing about 35 percent more farm products in the United States than we did before World War II. Likewise, in the absence of strikes, our output of nonagricultural goods and services has increased substantially. Employment and output are at very high levels. Increased output is our one and only method of increasing our level of living. But the increased output, if not matched by increases in buying power, will lead to lower unit prices.

Ordinarily we do not have to worry about increases in total national output because the money supply tends to keep up with output as it increases. However, if the supply of one commodity becomes excessive in relation to consumers' usual purchases of that commodity, the price may drop drastically. For example, if consumers have their incomes pretty well budgeted as between food and other expenditures, and as between potatoes and other foods, a bumper crop of potatoes will lead to lower prices for potatoes. We do not need to worry about overproduction in general, but we do need to seek balanced production—balanced according to the needs and desires of consumers.

Speed of spending. If all of us should decide to spend only one-half of our incomes and leave the rest idle in our checking accounts, trade would dry up and we should have a depression. The money must continue to flow or pass from consumer to businessman, or government, and back to consumer in a steady stream in order to maintain price stability.

Low income groups and governments spend their incomes as soon as they receive them. They therefore cause little or no change in the speed of flow of money. Higher income groups save a larger fraction of their incomes. They may decide that it is a poor time to invest their savings in productive enterprises, leave their money in the bank, and thereby check the speed of the flow. But a very large fraction of demand deposits is held by business concerns, particularly large corporations. If they find no profitable way to spend their money, their "hoarding" will really slow down the income stream. They will discharge workers and quit buying raw materials. This will cause further layoffs in raw-material-producing industries, or, as in agriculture, cause the price of raw materials to drop.

The quantity of money. All major inflations have resulted from an expansion of the money supply. Some deflations have been precipitated by a contraction in the money supply. The folks who are worrying about further inflation are fearful that the money supply will be increased

faster than the supply of goods and services offered for sale. The folks who are worrying about deflation are fearful that (1) the supply of goods reaching the domestic market will increase as the result of the reduction in exports, or (2) businessmen will become frightened about the outlook for profits and slow down the flow of money. Very few people expect a contraction of the money supply on a large scale.

The money supply can be increased by either of two methods. Gold can be sent to the United States and converted into money and that money expanded into five or six times as much in bank deposits. It can be newly-mined gold in this country or in any other country or it can be shipped out of accumulated stocks in other countries. The second and more important method of increasing the money supply is by expanding bank loans.

When you borrow money from a bank you have more money. No depositor of the bank, nor anyone else, has less money because you borrowed some. There is thereby created an addition to the supply of money. If the government spends five billion dollars more than it takes in, it has to borrow that money. If it borrows it from you by selling you a bond, that is merely an exchange of money from you to the government. But if the government borrows it from the banks, there is an addition of five billion dollars to the supply of money.

Likewise, when consumers increase their borrowing on open account or by borrowing on installments or borrowing from banks, it all results in an expansion of bank credit and in an increase in the supply of money. The same reasoning applies to farmers and other businessmen.

The primary reason why our national personal income is almost three times as high as before the war is that the government borrowed tens of billions of dollars from the banks. The present fear is that the government will keep up the process. That will lead to higher prices, further distortions in our economy and the greater probability of an eventual collapse of the whole economy.

The only important methods of reducing the money supply are to ship gold out of the country or pay off our debts to the banks. If you write a check to your bank to pay off a \$1,000 note you will have \$1,000 less and no one will have more money. The bank will write off its liability to you for your \$1,000 deposit and write off its asset in the form of your \$1,000 note — just a bookkeeping operation. If the government collects more taxes than it spends currently and uses the excess to pay off its debts to the banks (cancels the bonds held by banks) there is a net reduction in the money supply. You, as a taxpayer, have less money. No one has more.

In the chart all groups are shown as having access to banks. This is a

two-way traffic. Either new money can flow into the income stream from the banks, or money can leave the income stream to repay bank loans. Obviously, the borrowing has to come first. Therefore, we don't have any "busts" unless we have had a previous "boom." An excessive net flow in either direction will tend to cause prices to change.

Excessively high taxation used to redeem government bonds held by banks will be deflationary. Heavy reduction of debts by consumers, farmers, or businessmen will be deflationary. Fear of not being able to earn profits will slow down outlays by business concerns and will be deflationary. Optimism regarding future profits leads to free spending by businessmen and to the expansion of bank credit because businessmen are willing to borrow for expansion purposes. Residential construction is financed to a large degree by borrowed money. We never have serious and prolonged economic difficulties so long as residential construction continues to expand. Consumers continue to spend freely so long as they are sure of retaining their jobs.

Outlook

It would be economically unwise and politically inexpedient to drastically reduce our federal debt by greatly increasing taxes. (That does not imply that the debt should not be reduced moderately in boom times.) There is much more likelihood of further inflation by the deficit-financing route. It is a more effective vote-getting procedure. Even a mild recession could put the "ins" out and the "outs" into government offices.

The outlook for profits can change from week to week. Excessive taxation could kill all incentive to expand and cause business stagnation. Some one phase of business could be forced into bankruptcy by excessive wage rates. The collapse in that segment of business could cause apprehension in other segments. I doubt whether that occurs. In agriculture we must prepare shortly for a decline in foreign demand for our products unless we can find new outlets. It is likely that more will back up in our own markets. We cannot afford to produce more than the consumers are willing to pay for. Consumers will continue to spend a large part of their incomes for housing, automobiles, and other nonfood items. That is as it should be. But it could be possible through overproduction to have prices of farm products forced down while the prices of other goods and consumer incomes remained at a high level.

For the economy as a whole there is nothing in the immediate picture that would suggest a collapse. There is some danger of further inflation as the result of an unbalanced federal budget.

G. L. JORDAN

THE AMOUNTS OF FEED USED TO PRODUCE 100 POUNDS LIVE-WEIGHT OF ANIMALS OR ITS EQUIVALENT OF MILK ON FARMS OF NORTH-CENTRAL ILLINOIS

A north-central Illinois farmer sent a letter to the University of Illinois recently asking "Do you have any data showing the ratio of corn per pound of beef compared with the production of pork?"

A study of complete feed records kept by 240 cooperators in the Farm Bureau Farm Management Service during the 10 consecutive years of 1936 to 1945, all farming in north-central Illinois, shows the average amounts of feeds used to produce 100 pounds liveweight of animal or in case of dairy cattle, its equivalent in milk (Table 1). (One thousand pounds of milk has been considered as equivalent in feed requirements to 100 pounds liveweight of cattle.)

The weight of grain fed included grain in silage, and the hay included the dry roughage in silage. About 80 percent of the feed grain produced on the average farm is corn and 20 percent is oats. A pasture day off pasture is the amount of pasture consumed by one mature cow on full feed of pasture in one day.

The relative profitableness of different kinds of livestock cannot be judged alone by the amounts of grains required to produce a given amount of livestock or livestock product. The other items that affect profits are the differences in the amounts of hay and pasture fed, in the labor required, in the prices received for products sold, and in case of feeder cattle and feeder sheep the increased value of the weight of

TABLE 1.—FEED REQUIREMENTS, LAND USE REQUIREMENTS, TOTAL FEED COSTS, AND PRICES RECEIVED FOR DIFFERENT KINDS OF LIVESTOCK ON 240 FARMS IN NORTH-CENTRAL ILLINOIS DURING THE TEN YEARS OF 1936 TO 1945^a

Items considered	200 farms with hogs	40 farms with feeder cattle	19 farms with feeder sheep	40 farms with dairy cattle	14 farms with beef cows	14 farms with native sheep
Farm feeds fed per 100 pounds of livestock produced:						
Grain—pounds.....	398	700	456	269 ^b	376 ^b	159
Hay—pounds.....	3	320	303	541	497	417
Pasture—pasture days.....	2	10	26	25	41	60
Land use requirements:						
Grain—acres per 100 acres.....	90	60	34	22	21	8
Hay and pasture—acres per 100 acres.....	10	40	66	78	79	92
Total feed cost per 100 lbs. liveweight produced ^c	\$7.13	\$12.89	\$9.89	\$8.97 ^b	\$10.84 ^b	\$9.28
Average price received per 100 lbs. liveweight:						
Beef, hogs, or sheep.....	\$10.87	\$12.21	\$10.57	\$8.70	\$10.80	\$12.24 ^d
Milk.....				\$2.07	\$1.82	
Average price paid.....		\$10.56				
Average spread in price.....		\$1.65				

^a Data are from farms enrolled in the Farm Bureau Farm Management Service on which feed records were kept.

^b Feed per 100 pounds of beef or 1,000 pounds of milk.

^c The total feed cost includes the cost of purchased protein and mineral supplements as well as the value of farm feeds.

^d Includes the sales of wool and sheep.

animal brought to the farm which is usually referred to as the spread between the buying and selling prices.

Hogs were more profitable than other livestock during the ten years of 1936 to 1945 largely because of relatively higher prices of hogs in relation to the price of feed than for other livestock and livestock products.

Land use requirements of different kinds of livestock. Year-to-year net earnings cannot be used alone as a true measure of the profitability of different kinds of livestock. The long-time productive capacity of the land on which the crops are raised and the livestock fed must be considered also.

The land use requirements varied widely for different kinds of livestock — from 8 acres of corn and oats and 92 acres of hay and pasture for native sheep to 90 acres of corn and oats and 10 acres of hay and pasture for hogs. (See Table 1.) These data are based on the use of tillable land only. The acreages are based on average yields of grain, hay and pasture and average rations fed to different kinds of livestock on the Farm Bureau Farm Management Service farms.

The yields used in the calculations, which were approximately the 10-year averages for the livestock farms, were:

	<i>Corn</i>	<i>Oats</i>	<i>Hay</i>	<i>Pasture</i>
Hog farms.....	65 bu.	50 bu.	2.5 tons	120 pasture days
Cattle and sheep farms.....	70 bu.	55 bu.	2.5 tons	120 pasture days

The 10-year average corn yields were 3.8 bushels per acre higher on 26 farms on which 66 percent of all crops produced (including pasture) was fed to beef cattle than on 65 farms on which 67 percent of all crops was fed to hogs. (The yields were adjusted for differences in natural productivity of the soil.)

The corn yielding ability of the soil was increased by three bushels per acre more on the cattle farms than on the hog farms during the 10 years.

The higher 10-year average corn yields and the greater increase in yielding ability during the 10 years on the cattle farms were evidently due to the larger acreages of legume hay and pasture, the more effective use of manure, and the better control of erosion and development of better soil texture on the cattle than on the hog farms.

M. L. MOSHER

CHOOSING A MARKET FOR ILLINOIS HOGS

In 1948, one group of Illinois hog farmers received an average price of \$22.40 per hundred and another group received \$23.42¹ Three factors largely explain this price differential: (1) variations in weight and grade

¹ "Illinois Farm Economics," August-September, 1949, p. 885, Table 7.

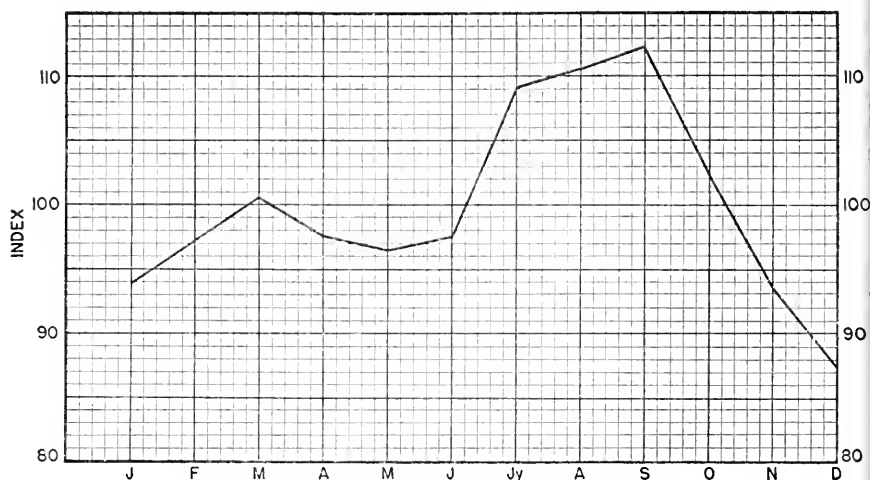


FIGURE 1.—THE SEASONAL MOVEMENT OF HOG PRICES

of hogs sold; (2) variations in seasons marketed; (3) variations between markets.

Most farmers are well acquainted with the normal seasonal pattern of hog prices as shown in Figure 1. But because of the cost factors or for other management reasons they may not wish to try for the seasonal high price. The breeding and feeding program is then planned to take advantage of these market conditions insofar as is consistent with the over-all farm program and the available capital facilities. Even with an over-all program certain adjustments are necessary during each year to take advantage of current market conditions. Each farmer for his particular lot of hogs must make decisions on when and where to sell. Some of the factors he needs to consider are discussed in the following paragraphs.

At what weight should hogs be sold? This depends upon management as well as market factors. Usually top prices are paid for 200-240 pound hogs but there are many and frequent exceptions. More specifically a farmer must decide if hog prices will be high enough in the next 30 days to pay for the feed the hogs consume and other costs. Whether to sell light or heavy then becomes a twofold problem: (1) feed cost of gain and (2) anticipated price changes for various weight groups. These two questions are answered by each farmer every time he makes a decision to sell or not to sell.

Where should hogs be sold? There are many markets in Illinois. Hogs are sold by commission men on at least seven posted markets regu-

larly used by Illinois farmers. Over 80 auction barns operate where livestock may be consigned for sale and over a hundred local markets are operated by independent buyers, packers, and small slaughterers.

In determining on which market to sell, the farmer attempts to find the market that will give him the highest net return, all factors considered. The most common way to measure net returns is through a comparison of prices. But price is a dangerous tool unless a person also determines to what the price refers.

Three types of price comparisons are frequently made: (1) top prices, (2) average prices, and (3) specific weight and grade prices. Regardless of the price used there is the problem of determining who furnished the prices and if they are representative of conditions existing on the market. Top prices may be misleading. Frequently they refer to only a very small fraction of the market receipts or they may not even reflect market conditions as indicated by the following: "Barrows and gilts scaling 180 pounds upward ruled steady to strong with Wednesday's average, although the extreme top showed a 25 cent reduction."¹ Average prices cover a number of different grades and weights; hence, they have limited value. The farmer in comparing markets on the basis of price needs to determine in what weight and grade groupings his particular lots of hogs would sell to arrive at gross return. From this he needs to deduct the various out-of-pocket marketing costs such as transportation, insurance, etc., consider the invisible items of shrinkage, risk of price change from the time the hogs leave the farm until sold, etc., to arrive at a net return comparison.

Although the various weight and grade factors are such that comparable price comparison may be made, price as a factor in comparing markets may be inadequate. Accuracy of scales and method of weighing may offset or compensate for price differentials. For example, recently some hogs covered with mud, were sold for top prices but the scale ticket was punched to show a weight less than actual. Price was not the measure of value. Price times weight gives value so far as the producer is concerned. For market prices to be comparable both these variables must be comparable.

While producers, hog salesmen, and packer buyers all indicate hogs should be sold on the basis of quality there is considerable variation in the extent of sorting for quality and weight factors in arriving at price. So, another variable is introduced: uniform sorting methods, when price is used to compare markets.

¹ "Daily Livestock Market Report," National Stockyards, Illinois, October 6, 1949.

The individual farmer with a particular lot of hogs then chooses the market he thinks will give him the largest net return after considering all cost items. In comparing different markets, he uses price as a measure of value making adjustments for (1) his particular lots of hogs on each market; (2) market weighing conditions; and (3) market sorting conditions.

The large number of markets of various types in the state indicate that the various factors are considered by farmers to have different relative importance. The invisible factors of personal acquaintance, market preference or prejudice, etc., are important in determining which hog market is used.

W. J. WILLS

MILK MARKETING — A DISCUSSION OF DEAN MILK COMPANY V. CITY OF WAUKEGAN¹

403 Illinois 597 (September, 1949)

Facts. The City of Waukegan has a comprehensive milk ordinance, section 577 of which provides that "no milk or milk products shall be sold in the City of Waukegan unless the same is produced and pasteurized in Lake County, Illinois, except and unless in case of emergency and then by approval of the health officer."

The Dean Milk Company, an Illinois corporation, filed a complaint in the circuit court of Lake County, asking for a declaratory judgment as to the validity of section 577. The circuit court decreed this section invalid because it purports to regulate milk producers, dairy farms, and milk plants, as defined in the ordinance, located more than one-half mile beyond the corporate limits of the city. It decreed specifically that section 577 be declared null and void and of no force and effect. The court retained jurisdiction of the cause for the purpose of entering orders necessary to enforce its judgment. The case was appealed to the Supreme Court of Illinois by the City of Waukegan.

Holding. The Supreme Court of Illinois upheld the decision of the Lake County Circuit Court in favor of the Dean Milk Company. Among other things, the court said: "It would seem — that section 577 — operates, not to regulate, but to prohibit completely the sale of milk from outside Lake County within the city. The record does not disclose that the milk to be sold is harmful or that its sale within the city would endanger the health or welfare of the public.

¹ See "Milk Marketing — A Discussion of Higgins v. City of Galesburg," Illinois Farm Economics Number 166, March, 1949.

"The rationale of the *Higgins* and *Rockford* cases is that as municipalities do not possess the power to regulate milk plants beyond their limits, they cannot provide for their convenient location in order to subject them to regulation. In our judgment the ordinance here attempts to regulate extra-territorially without possessing the power so to do."

Discussion. That the City of Waukegan had authority to regulate the sale and distribution of milk within its limits was admitted by both parties and assumed by the court. The City contended, however, that the power to regulate within its limits includes the power to regulate sources outside the city; that to insure wholesome milk for its inhabitants it must inspect the sources from which it comes and the plants where it is processed; and that to admit milk from territory outside Lake County would so increase the cost of inspection and be so inconvenient as to render impracticable and ineffective the system of inspection. However, the City did not contend — indeed it could not contend — that the only reasonable way of informing itself was by its own inspection, because it admitted that milk subject to inspection by the village of Winnetka was acceptable in Waukegan. To the outside observer this admission would seem to remove most of the substance which might have supported section 577, and points rather strongly toward the contention of the milk company, that the section is unreasonable, arbitrary and discriminatory, and that its purpose and effect is to erect a trade barrier and encourage monopoly within Lake County. On this point the court quoted from a New Jersey case involving similar facts, in which the New Jersey court said ". . . the city just took the position that it had enough milk dealers and that it had the situation 'well in hand.' Such a position is unreasonable; it is arbitrary, capricious, and discriminatory."

Conclusion. The Illinois Supreme Court, as a result of decisions reached in *City of Rockford v. Hey*, 366 Illinois 526, *Higgins v. City of Galesburg*, 401 Illinois 87, and in the present case, has definitely gone on record in support of the one-half mile statute as a limitation on a municipality's power to enforce its milk inspection and licensing procedure. Of more significance, however, is the fact that in the present case the court chose to quote language which decries the use of a health ordinance as a device to monopolize or restrict trade. In the end such a philosophy on the part of the State Supreme Court may be more important than the rules of law themselves in determining the future milk marketing pattern in Illinois. Also it points to the desirability of instituting uniform and adequate state inspection outside corporate limits.

H. W. HANNAH

ARE ILLINOIS FARMERS WELL HOUSED?

It is not always easy to draw two sharp lines and to declare that one group of dwellings is less than adequate, another adequate, and still another more than adequate. Some of the "minimum standards" of housing are open to question and all are, of course, easier to state than to bring into application on people who are not aware of the need for better housing or who do not feel financially able to meet these more or less arbitrary standards. There are, however, certain housing facilities, etc., which are widely accepted as a part of the "American standard of living," that is, a part of the level of living to which most American families aspire and with which they feel they would be satisfied. Just how well do Illinois farm houses measure up to some of these criteria?

Recommendations for comfortable housing usually call for not more than one person per room, and it is fairly common to classify as overcrowded dwelling units which have more than 1.5 persons per room. It was found that 5.7 percent of the occupied rural farm dwellings in Illinois were overcrowded on this basis in 1940, while 14.4 percent had more persons per room than are recommended for comfort. About 12 percent of the owners were below the comfort level as far as space was concerned compared with 17 percent of the tenant occupants.

Three out of ten of the rural farm dwellings in Illinois were reported to be in need of major repairs in 1940. About 27 percent of the owner-

TABLE 1. — PROPORTION OF RURAL FARM DWELLINGS REPORTING SPECIFIED SERVICES AND EQUIPMENT BY TENURE OF THE OCCUPANT, ILLINOIS, 1940

Item	Total rural farm ^a	Tenure of occupant	
		Owner	Tenant
Number of dwelling units.....	259,758	124,396	124,865
PERCENT REPORTING:—			
Water supply:			
Running water in dwelling.....	16.1	21.5	11.7
Hand pump in dwelling.....	19.9	19.0	21.6
Running water within 50 ft.....	4.6	3.8	5.3
Other water supply.....	55.4	52.8	57.0
No water supply.....	3.9	2.9	4.4
Toilet facilities:			
Flush toilet in structure.....	13.0	17.7	8.7
Non-flush toilet in structure.....	0.2	0.3	0.2
Outside toilet or privy.....	84.2	79.8	88.7
No toilet or privy.....	2.6	2.2	2.4
Bathing facilities:			
Bath tub or shower.....	13.4	18.2	9.2
No bath tub or shower.....	86.6	79.8	90.8
Lighting facilities:			
Electric light.....	38.5	44.7	33.9
Without electric light.....	61.5	55.3	66.1

Source: Calculated from data presented in U. S. Census, Housing, 1940.

^a This column includes data on 10,497 vacant rural farm dwellings in addition to those on the two tenure groups shown to the right.

TABLE 2. — COMPARATIVE DATA ON OWNER-OCCUPIED HOUSING BY RESIDENCE, ILLINOIS, 1940

Residence	Median value ^a of owner-occupied units ^b	Average number of persons per dwelling unit	Percentage having running water	Percentage needing major repair
Total — Illinois.....	\$2,978	3.60	78.9	15.7
Rural farm.....	1,384	3.88	16.1	30.4
Rural nonfarm.....	1,715	3.61	44.5	25.4
Urban.....	3,766	3.56	95.3	11.4

Source: U. S. Census, Housing, 1940.

^a A part of the difference in value is accounted for by the fact that the values of urban and rural nonfarm units include the land on which the dwellings are located whereas the value of farm units excludes all land.

^b The median contract or estimated monthly rent for tenant-occupied dwellings showed a similar but slightly wider relative spread: Illinois, \$24.78; Rural farm, \$9.21; Rural nonfarm, \$11.18; and Urban, \$28.73.

occupied units and 32 percent of the tenant-occupied units reported the need of major repairs. From census data for 1940 it was possible to calculate the average age of rural farm dwellings. Tenant-occupied dwellings averaged 44.4 years; owner-occupied, 38.9 years; and all dwellings, 41.6 years of age.

Only about one farm dwelling in six in Illinois in 1940 was supplied with running water. While almost twice as high a proportion of owner-occupants as tenants enjoyed this convenience, only about one in five of the farm-owner families was supplied with piped water in the dwelling. Fully three out of five rural farm families had to go outside the dwelling unit in order to gain access to the family water supply, and only about one in eight of the rural farm homes in the state were reported to have indoor flush toilets or a bathtub or shower in 1940.

Less than two-fifths (38.5 percent) of the *rural farm dwellings* in Illinois were equipped with electric lighting facilities in 1940. In 1945, 60.2 percent of the *farms* in the state were reported by the Census of Agriculture to be equipped with electricity. These two figures, 60.2 and 38.5 percent, are not entirely comparable; but they do, of course, indicate some increase in the proportion of farms and farm dwellings with electricity available.¹

Farm housing in general lags far behind urban housing in value, convenience, comfort, and adequacy. The values of dwellings in towns and villages showed averages which were, on the whole, higher than those on the farms in the surrounding areas in 1940; and the median

¹ Allowance must be made for at least two differences in the bases on which the data for 1940 and 1945 were collected and analyzed: (1) the number of rural farm dwellings in Illinois is between 20 and 25 percent larger than the number of farms and (2) the 1940 figures cover only rural farms while the 1945 figures are for farm tracts within urban limits as well as rural farms.

value of owner-occupied units in urban areas (\$3,766) was almost three times as high as in rural farm areas (\$1,384). While rural farm houses were valued at only about one-third as much as urban dwellings, they housed larger families, had fewer conveniences, and stood in greater need of major repair than did urban houses.

There are a number of reasons why rural farm dwellings are not as well supplied with many of the services and items of equipment considered indispensable in urban homes. Some services such as piped water have long been unavailable to many except at what was often a prohibitive cost. While some farmers have incomes which are too low in relation to the cost of adequate housing to make it possible for them to supply the housing needs of their families, other farm families could afford adequate housing but lack knowledge of what constitutes good housing and how to go about acquiring it. Still another factor is the prevalence of landlords who are reluctant to install modern plumbing and heating conveniences, for example, because they see no possible economic gains for themselves resulting from better equipped tenant houses.

Average dwelling values (and values are a reasonably good index of the quality of housing) tend to be greater in counties with higher average total farm real estate values per farm than in those with lower average values; but dwellings make up a more important part of the real estate on farms with low than on those with high total real estate values. This means that farm dwellings with relatively low dollar values make up a larger part of the investment in the farm business in southern Illinois, where farms tend to be smaller and valued less highly than in other parts of the state, than do more valuable dwellings on farms of greater value in the northern and central parts of the state.

The average value of farm operators' dwellings tends to be greater in counties with larger average gross incomes per farm than in those with lower incomes. As incomes increase beyond a certain point, however, dwelling values continue to increase but only at a slower rate. To the extent that this slowing down of the rate of increase of dwelling values takes place before a satisfactory level of housing is reached, it indicates a need for further education to stimulate the desire for better housing. On the other hand, once a level of satisfactory housing has been achieved, it is only natural that a higher proportion of the increased income should be saved or used to satisfy wants other than for the basic necessities of food, clothing, and shelter.

Most people are inclined to look upon Illinois as a wealthy state of big farms and well-to-do farmers. It is somewhat surprising, therefore, to note the low average value of farm dwellings and the small proportion

which are equipped with modern conveniences. There appears to be good warrant for the conclusion that even in the best of the agricultural states of the nation there is a great deal of substandard farm living.

W. J. FOREMAN

THE PROCESSORS SHARE OF THE FOOD DOLLAR

The processors share of the consumers food dollar increased from 12 cents to 21 cents in the 1914-1947 period. This great increase calls for an explanation of the underlying causes.

General Considerations

The consumers food dollar is distributed among farmers, processors, and distributors as payments for services rendered in providing food. The quantity of services provided in each of the above functions, multiplied by the price of the services, determines the payments made to each group.

Services rendered. Farm services are embodied in farm commodities. A hundred pounds of wheat embody a sum of services of land, labor and capital. An equivalent quantity of cattle embodies more services than wheat; eggs, more than cattle. Farmers tend to render more services by increasing the output of farm products generally or by shifting to the more intensive enterprises, e.g., from grain to eggs.

Food processors render services primarily by converting farm products into processed foods. Some processed foods require more processing services than others, e.g., cake more than flour, tinned ham more than fresh ham. Food processors tend to render more services by increasing the output of processed foods generally, or by shifting to the more intensive processes, e.g., from butter to ice cream.

Distributors of food render services of transport, storage, display, transaction, etc. Some foods embody more distributive services than others. For example more services are required to transport, store, display, and sell fresh peaches than canned peaches; likewise more services are involved in the distribution of bakery products than flour, or ice cream than cheese. Food distributors tend to render more services by increasing the distributive services generally, or by shifting to activities with high service requirements. They may also render less services by reversing the above trends, as may farmers or processors.

Taken together, the services of farmers, processors, and distributors are bundled into the food purchased by the housewife in her local store.

Prices of services. The price paid by the housewife for food is

essentially payment for the services embodied therein. This sum is divided among farmers, processors and distributors in accordance with the units of service contributed by each, and the price charged thereon.

The prices of services are determined by the interaction of associated supply and demand factors. It would lead us too far afield to investigate the pricing of services. Let it suffice to note that the supply of services is in a general way related to the cost of producing the service, while the demand for services is in general derived from the consumers demand, or in some instances from demands of intermediaries. Put in this way, the argument leaves room for the existence of discrepancies between costs and prices of services.

Payments for services. The total quantity of services rendered, times the price, determines the payments to farmers, processors, and distributors. The *relative* size of the payment to each group (share of the food dollar) is determined by the *relative* quantity of services rendered (share of total services) times the *relative* price of the services (share of the retail price of food).

To explain the increase in the processors share of the food dollar we must show that either their share of services increased, or that the price of processing services increased (relative to the retail price of food), or both. This is done below, following a brief description of changes in the shares of the consumers food dollar divided among farmers, processors and distributors.

Comparative Shares, 1914-1947

The share of the consumers food dollar taken by each group in the 1914-47 period is shown in Figure 1. Since the analysis is necessarily confined to census years, gaps exist. However, the data indicate quite clearly the major changes during the period under review.

The major change shown in Figure 1 is the long-term increase in the processors share, 1914-39. The farmers share tended to decline whereas the distributors share changed very little. A second feature worth noting is the short-term stability of the shares. The distributors share was fully as unstable as the farmers share, a point not generally recognized. The processors share fluctuated least.

The 1947 observation is the only one available since 1939. Farmers gained over prewar and distributors lost; processors maintained their position.¹ Probably much of this violent change is of a short-term nature

¹ The processors share was taken to be the percentage that value added in food manufacturing establishments was of the retail value of domestic food purchases. These series are comparable in the sense that nearly all processed foods (from a value added standpoint) move into domestic consumption in the year produced. The

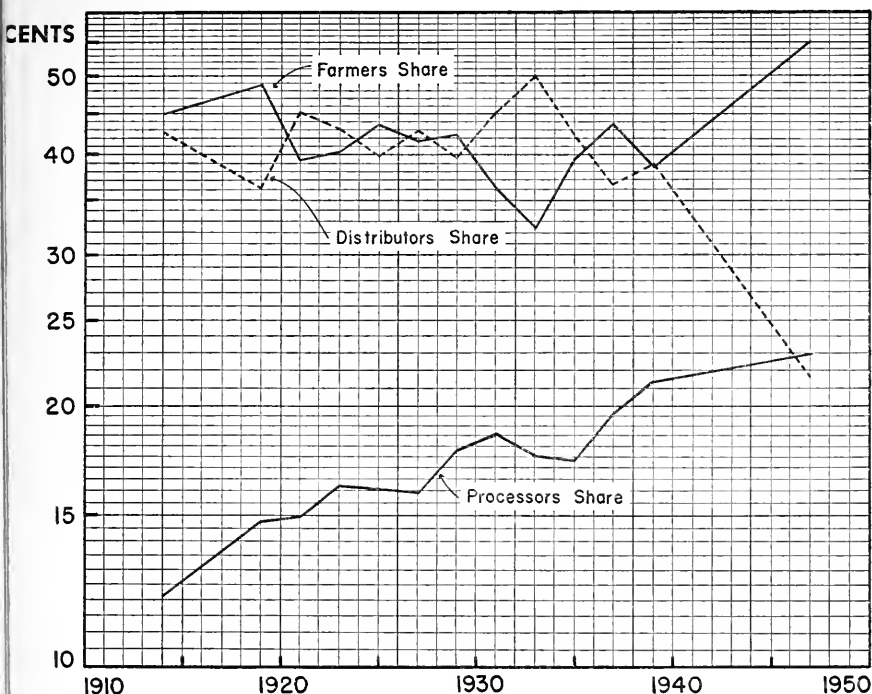


FIGURE 1.— SHARE OF THE CONSUMERS FOOD DOLLAR PAID TO FARMERS, PROCESSORS, AND DISTRIBUTORS, 1914-47

and current relationships among shares are more in line with 1939 conditions but how closely we do not know.

Explanation of the Increase in the Processor Share

The main reason for the increase in the processors share of the consumers food dollar is that processing services increased more than other services. That the price of processors services also increased more than the price of other services is secondary.

1947 observation is least reliable in this respect since exports of processed foods were of some importance. Although we have probably overstated the true share of processors in 1947, the pattern of shares shown in that year is roughly accurate.

The farmers share is that calculated by the Bureau of Agricultural Economics (U.S.D.A.). The distributors share is residual.

For the definition of the food processing segment see A. B. Paul "The Economic Structure of the Food Processing Industry," University of Illinois Agricultural Experiment Station, Mimeo. F.5. (However, the alcoholic beverages are excluded).

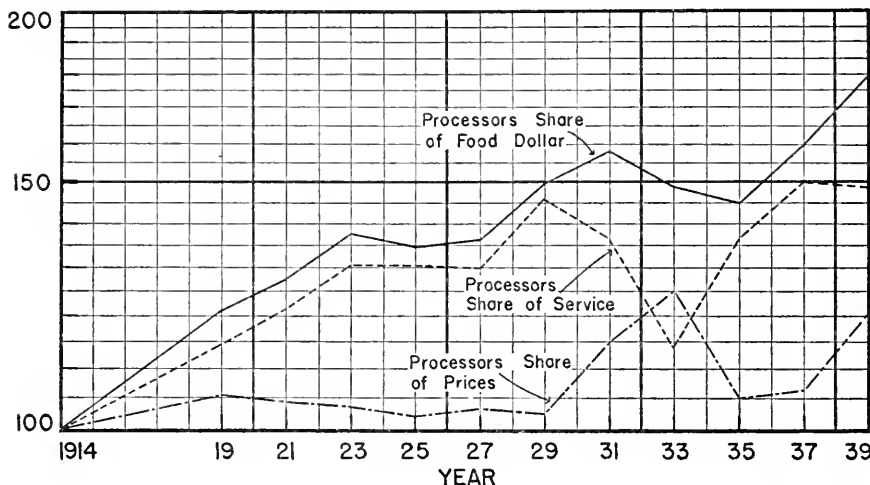


FIGURE 2.—INDEXES OF THE PROCESSORS SHARE OF THE FOOD DOLLAR,
AND PROCESSORS SERVICE AND PRICE CONTRIBUTIONS
(Index 1914 = 100)

These trends are shown in Figure 2.¹ We note in this chart (as in the previous chart) that the processors share of the food dollar increased rather persistently, (with some backsliding in the mid-twenties and early thirties). But we note also that the processors service contribution relative to the total increased rather persistently. As compared with the base year of 1914, the 1929 processors share of the food dollar was 49 percent greater but the 1929 processors share of services was 46 percent greater. In 1939 the respective percentage increases were 79 percent and 49 percent. Thus, in these selected years increased services represented the major reason for the increase in the processors share of the food dollar.

¹The definition of the food processing sector in Figure 2 is slightly different from the definition in Figure 1. The former definition follows that of S. Fabricant, *The Output of Manufacturing Industries, 1899-1937* (National Bureau of Economic Research) on which our index of processing output is largely based. However, the differences in definition result in negligible differences in the indexes of the processors share of the food dollar, as shown.

The processors share of retail prices was taken to be the index of processing margins (derived from an index of value added in food manufacture and the index of food manufacturing output) divided by the Bureau of Labor Statistics index of retail food prices. Thus, given the index of the processors share of the food dollar and the index of the processors share of retail prices, the index of the processors share of total services is residual. The latter index may be derived directly (from index of food manufacturing output and an index of domestic food consumption) and a similar result obtained. However, there is reason to believe that the former method is preferable.

In most years, the increase in the processors share of the food dollar was due primarily to an increase in the services rendered by processors relative to the total services embodied in food products.

The residual cause of the increased processors share of the food dollar is, of course, the increase in the relative price of processing services. In 1929 it was two percent higher, and in 1939, twenty percent higher than in 1914. The year 1929 is typical of the situation in the twenties and 1939 is roughly typical of the situation in the thirties.

Note, however, that had the price of processors services remained in line with the prices of other services, the processors share of the food dollar would still have increased markedly due to increased services. The 1939 share would have been about 50 percent greater than the 1914 share (18 cents and 12 cents, respectively).

Significance. The above changes reflect a characteristic of the advance in the level of living in the United States: more commercial processing is demanded with each unit of food purchased. It is reasonable to expect that the demand for *services in food* will outrun the demand for *food in terms of pounds, calories, proteins, etc.*, since there are physiological limitations on the consumption of the latter. While farmers and distributors can also supply more services with each physical unit of food, they did not keep up with food processors in this respect in the period under review.

A. B. PAUL

Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. ⁹ Same as footnote 1. ¹⁰ Federal Reserve Bulletin of Federal Reserve Board. ¹¹ Preliminary estimate. ¹² Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹³ Monthly prices refer to baled hay. Annual data refer to loose hay.

H. P. Rusk

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TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production ¹⁰
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-39	
1933.....	82	67	57	94	67	68	75	69	54	69
1934.....	93	86	76	100	79	73	74	80	70	75
1935.....	99	104	102	101	89	86	85	86	80	87
1936.....	100	107	105	100	105	109	110	101	93	103
1937.....	107	113	118	104	111	116	112	107	111	113
1938.....	98	91	90	98	96	107	109	100	85	89
1939.....	96	86	84	97	99	107	110	107	100	109
1940.....	97	89	89	98	105	114	116	115	114	125
1941.....	108	108	112	103	140	146	140	138	168	162
1942.....	123	138	142	117	193	200	169	176	245	199
1943.....	128	162	165	127	244	241	190	217	334	239
1944.....	129	163	165	133	255	240	182	242	346	236
1945.....	132	168	171	136	270	248	182	250	293	203
1946.....	150	195	204	151	312	306	200	255	266	170
1947.....	189	238	265	181	377	397	213	279	324	187
1948.....	205	248	275	195	383	392	197	303	365	192
1948 Sept....	210	250	285	195	450	324	171	311	367	192
Oct.....	205	241	254	195	583	550	282	310	367	195
Nov.....	204	238	241	193	484	414	229	310	363	195
Dec.....	202	233	237	194	405	396	211	311	361	192
1949 Jan....	199	227	231	194	356	388	200	310	346	191
Feb.....	196	221	219	191	266	303	158	308	340	189
Mar....	196	226	226	192	293	346	180	308	333	184
Apr....	195	224	224	192	275	321	167	309	319	179
May....	193	225	220	191	288	309	162	310	313	174
June....	192	222	221	191	306	328	172	308	316	169
July....	190	219	217	191	326	366	192	307	313	162
Aug....	190	214	218	190	363	293	154	309	323	170
Sept....	191	215	224	189	392	...	...	310	...	174

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS¹¹

Product	Calendar year average			Nov. 1948	Current months, 1949		
	1935-39	1947	1948		Sept.	Oct.	Nov.
Corn, bu.....	\$.66	\$1.90	\$1.89	\$1.19	\$1.15	\$1.06	\$.99
Oats, bu.....	.31	.97	.94	.74	.59	.61	.66
Wheat, bu.....	.86	2.45	2.23	2.12	1.84	1.87	1.87
Barley, bu.....	.62	1.59	1.58	1.30	.95	1.04	1.08
Soybeans, bu.....	.90	3.28	3.20	2.41	2.16	2.12	1.97
Hogs, cwt.....	8.52	24.50	23.73	21.50	20.00	17.50	15.80
Beef cattle, cwt.....	7.88	20.48	24.70	22.90	23.00	22.00	22.50
Lambs, cwt.....	8.36	21.31	23.44	22.40	22.90	22.10	21.90
Milk cows, head.....	58.00	173.33	194.17	200.00	200.00	190.00	200.00
Veal calves, cwt.....	8.66	23.08	26.32	26.50	26.00	24.60	25.30
Sheep, cwt.....	3.58	7.39	8.93	8.40	7.50	7.80	8.40
Butterfat, lb.....	.27	.69	.73	.61	.58	.58	.59
Milk, cwt.....	1.68	3.95	4.49	4.20	3.50	3.75	3.80
Eggs, doz.....	.19	.41	.42	.52	.47	.45	.42
Chickens, lb.....	.15	.27	.30	.29	.24	.23	.22
Wool, lb.....	.25	.42	.42	.41	.42	.42	.41
Apples, bu.....	1.08	2.72	2.33	2.65	1.25	1.30	1.35
Hay, ton ¹²	9.39	16.88	20.64	21.70	20.50	22.00	22.70
Potatoes, bu.....	.91	1.91	2.00	1.80	1.80	1.70	1.80

¹⁻¹² For sources of data in tables see preceding page.

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Articles in This Issue

	PAGE
What Do We Want in Farm Policy? — H. C. M. CASE.....	941
Lessons from Our Agricultural Price Programs — W. N. THOMPSON....	948
The Interest of Consumers in Agricultural Policy — C. L. STEWART....	952
The Interest of Families on Non-Commercial Farms in Farm Policies — C. L. STEWART and W. J. FOREMAN.....	957

WHAT DO WE WANT IN FARM POLICY?

Agriculture may well be at the crossroads on farm policy matters. So many different views are being expressed that we need to get at the fundamental problems. We need to consider just what we want to accomplish in farm policy. We should think of farm policy, of course, as part of our whole national policy.

Any policy is a determined course of action to help attain some objective. Now, what are the major objectives of agricultural policy? To me, we may sum them up in two points: (1) To improve the level of living of rural people and (2) to maintain a large production per worker. These objectives apply to any other group as well as to agriculture. Relief programs, educational plans, government loans, price support operations, and other programs are not policies. They are merely means of attaining the over-all objectives set forth under the two heads.

With these two policy objectives in mind, I have tried to set up several principles which seem sound to me. They may be helpful as a guide in appraising the particular issues contained in any law, program or proposal. You may disagree with me on some of them, and that is your privilege. You will also notice that some of these principles conflict with each other. The final decision must be reached through weighing the pros and cons against a set of principles to determine whether the long-run gains exceed the costs. These are some of the things that I want for the good of agriculture and of our nation:

¹ Adapted from a talk given during Farm and Home Week, University of Illinois, February 9, 1950.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

1. I want a firm financial foundation for our country.

This means that we need to answer to our satisfaction whether or not the rewards from proposed action will justify the cost. We shall need to decide at a given time whether deficit spending by the federal government is justified or whether we should be creating a surplus for less favorable days.

2. I want a sound national plan for our entire economy.

This plan should emphasize national well-being, opportunity for young people to find productive employment, the maintenance of an effective consumer demand, and the continued development of individual initiative. To develop initiative, the farmer should have as much choice as possible to determine what products he will produce. Supply and demand should guide production.

3. I want a floor under farm prices to protect agriculture from price disaster such as occurred in the early thirties, and brought financial distress to people in all walks of life.

Such a floor is needed to encourage the abundant production of food and fiber products for the improved nutrition of our people and for better living standards. We must recognize, however, that it would be possible to support a price so high that consumption would be reduced.

4. I want farm people to receive a fair share of the national income.

In such a situation, farm people will remain effective purchasers of goods and services and will be able to provide education, health services, and protection in old age comparable to advantages for those engaged in other employments.

5. I want a farm program that will encourage efficient and economic production.

We know that production and marketing controls can be imposed in such manner as to perpetuate the inefficient and uneconomic producer and expand production into low producing areas. Also land kept out of use can be just as effective in increasing the farmer's cost per bushel and in reducing total income as low prices. Because of variations in production from year to year, we need to have alternative means of using farm production in case our attempts to produce abundantly lead to overproduction in certain lines. We also need to develop further plans for the utilization of farm products when overproduction occurs in particular lines.

6. I want to see our natural resources safeguarded.

This raises the question of how we can economically develop and use our total resources and still provide for their future protection. This point may well include adjusting the organization of inefficient farms so that

they will become economic units. We cannot, as a long-time policy, afford to subsidize inefficiency in agriculture any better than we can in other businesses.

7. *I want us to keep alert to international as well as domestic needs.*

This means the use of foreign markets as well as domestic markets to help maintain a balanced economy for the country. We need to establish trade arrangements between countries which will be mutually beneficial. This is in the interest of world peace as well as in the interest of economic well-being of our own country.

8. *I want long-time programs for agriculture not to depend in any large measure upon the uncertainty of Congressional appropriations.*

Any legislative action that involves the annual use of funds is no stronger than the willingness of Congress to appropriate funds annually to support the law. *Resorting to the use of public funds to support prices should be retained for emergency situations.*

9. *Finally, I want no special privilege, gratuity, or guarantee for agriculture which cannot be supported in principle for any other economic group.*

The guideposts for examining any proposed law, or any specific program for agriculture indicate that a well-rounded program for agriculture goes far beyond the question of price and income supports, crop loans, acreage controls, and crop insurance. It should include improved nutrition for all, better education, health facilities, and social security. Taxation, transportation rates, interstate and international trade, marketing facilities, conservation, and many other aspects of our economy should be kept in proper relationship. Space does not permit discussion of many items, but we can raise some important questions in the field of farm production and marketing policy.

QUESTION I: *What kind of support is wanted or is best for agriculture?*

You'll notice that the emphasis is on what kind of supports — and not on whether we should have supports or not. I think we can assume that both major political parties will continue some form of price or income support legislation, even though the existing 1949 Agricultural Act may be changed.

A part of the answer to question I depends upon whether we want price supports or income supports. It is important that we understand the difference between the two. A price support considers only the price of a product and does not consider the quantity of that product. Income support, on the other hand, considers both the price of the product and

the quantity of the product produced. Most of us, I think, are more interested in the amount of income we receive than the particular price we receive for what we produce and are permitted to market.

The theory behind a flexible price support plan included in both the 1948 and 1949 Agricultural Acts was to have the price support vary inversely to the supply so as to stabilize farm income. In fact, a flexible price support was the major feature in both the 1948 Hope-Aiken Bill and the 1949 Anderson Bill.

The Hope-Aiken Bill would have provided farmers a minimum price support of 60 percent of parity even when crop controls and marketing quotas were not in effect. As soon as either crop controls or marketing quotas were put into effect, the minimum price support was to have advanced to 72 percent of parity price regardless of the size of the crop produced. Under the Anderson Bill, after either acreage controls or marketing quotas had been put into effect the minimum price support would stand at 75 percent of parity. When these two bills finally became law, the lower house of Congress insisted on delaying the flexible price support feature. A 90 percent price support was to be maintained for one year under the Hope-Aiken Bill. Under the Anderson Bill, the support is to remain at 90 percent of parity for 1950, 80 to 90 percent in 1951, and finally in 1952 the flexible price support feature would become fully operative from 75 to 90 percent of parity. In the meantime we are bound to have a great deal said about the present agricultural law.

Some people will say that the present large accumulation of corn and other products is proof that the 1949 Anderson law will not work. A major reason it may not work is because the flexible price support plan provided in the Hope-Aiken Act was postponed a year by House action, and again the flexible price support under the Anderson Act will not become active for two full years. In effect, then, the flexible price support feature has been delayed from becoming active for 3 years after the proposed date for it to become active under the Aiken Bill. If we should continue to have large crops for another 2 years the real flexible price support plan can hardly be expected to work well unless the large supplies of surplus products now in storage are removed from the market. Any sound plan is handicapped when an attempt is made to put it into action when the market is already depressed by large surpluses.

QUESTION II: How do controls or lack of controls affect agriculture?

Past experience throws some light on this question. Tobacco production, for instance, has become practically a closed corporation with monopoly control over production. The allotment of an acre of tobacco to a farm is reported to add from \$1,000 to \$2,000 to the value of the farm. When this takes place, most of the profit from tobacco production for a

new purchaser of a tobacco farm is represented in the cost of the farm. In the long run the seller of the farm is the one who profits most from the tobacco price support.

Take an alternative illustration. When acreage controls were removed from cotton in 1943, the location of cotton production began to change. The acreage of cotton has doubled in the irrigated areas of western Texas, Arizona, New Mexico, and California, but it has been cut about in half in Georgia, Alabama, and Oklahoma. Cotton production has moved to the best adapted land. In 1948, there was about as much cotton produced on 23 million acres of land as had been produced on about 40 million acres in earlier years. In talking with cotton growers about a year ago I found that they were anxious to have acreage controls but that they expected to continue to grow crops on all of their land. When I asked what crops they would grow in place of cotton, their answer for the most part was corn and soybeans. So far as I can analyze the situation, the cotton growers are pricing themselves out of the foreign markets. The high price supports for cotton have made it easier for other countries to compete with us in selling cotton to foreign buyers. Also, we know that the high price of cotton has encouraged the use of synthetic fibers at home. We could probably further say that the improved methods of production and increased yields of cotton have made it possible to produce cotton at less cost than 15 years ago, although the price of cotton is being supported as though there had been no change in the cost of production.

QUESTION III: Do we want the same price support for all products?

Personally, I doubt if any price support program will operate successfully unless the Secretary of Agriculture or someone else adjusts supports between different products. For example, I am convinced that a 60 percent of parity price support on potatoes will get a relatively larger production of potatoes than an 80 percent support price on meat animals.

In meat production, the largest item of cost is feed which has a definite sale value on the market. As long as farmers are guaranteed 90 percent of parity price for corn many of them will not take the trouble to raise hogs or feed beef cattle.

Whenever the support price for a particular product looks favorable compared with other supports there is a tendency to over-expand the production of that product. Wheat offers a good example. Due partially to favorable growing conditions and improved methods of production, wheat production was extended to millions of acres of what had been range land on the western plains. In fact, in both 1947 and 1948 we produced about one and one-half times the amount of wheat we would normally consume in this country. As long as wheat production is maintained we need to look to foreign markets for an outlet.

QUESTION IV: *Will production controls penalize the good farmer?*

Within the past few years, with the emphasis upon soil conservation, many farmers have established good rotations and have made a marked reduction in the acreage of corn and soybeans. For instance, a farm that had two-thirds of the acreage in corn prior to the war has now developed a rotation with only 40 percent of the land in corn. The adjustment in acreage of corn for 1950 will call for a reduction of 20 percent in corn on this farm. This reduction equals 8 percent of the entire acreage in the farm. Thus, the 1950 allotment of corn to that farm will amount to less than one-half of the acreage grown before a good cropping system was established.

If good cropping systems were established on all Champaign County farms, I believe we would have a 20 percent reduction in the acreage of corn without asking those who have a good rotation to make any further reduction. Another aspect of this situation is that some farmers who normally feed all the corn they grow are not planning to reduce their corn acreage in 1950 unless there is a penalty of some kind imposed to force them to make the reduction. This means that the farmers who normally sell corn will be penalized under present conditions. This is another illustration of the fact that we will not be very successful in reducing production by reducing acreage in a given crop unless provision is made that no harvested crop will be taken from the land held out of production of the controlled crop. There will be the tendency to shift that land to a crop which will compete with producers in some other area.

QUESTION V: *Will high prices interfere with international trade?*

The devaluation of the currencies in many foreign countries had the effect in the eyes of buyers in those countries of increasing the price of any grain received from the United States. This means that if European countries find that the prices of wheat, cotton, or other products formerly bought in this country are cheaper in some other country which has devalued its currency, the tendency will be to buy from the country where the price is lowest. That is especially true when they have found it so difficult to find American dollars with which to buy American products. This situation merely points out that we may find it increasingly difficult to clear our own markets of surplus products through exporting them to foreign countries.

One of our problems is how we can have the large supplies of grains on hand without letting their presence depress market prices. Present supplies are a potential supply that will hold down the normal trend of prices. The idea of an ever-normal granary is good, but there is a definite question of how much grain we can hold in an ever-normal granary without its holding down prices. We know that there were many livestock feeders

who bought new corn this year at less than a dollar a bushel, although they secured a government loan of about \$1.40 on the corn they raised. As a taxpayer that kind of a two-price system really hurts.

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This discussion of some of the price support problems should indicate that American agriculture is at the crossroads. Some people seem willing to let the government handle the matter for them so that they will not have to worry about it. Some elements of labor have come out strongly for the Brannan Plan. This is understandable.

The Brannan Plan would let the market price of products go where it would. With our present production this would insure consumers low prices for food in the market, but if farmers received a larger income than they do now, as is proposed, the federal treasury would have to make up the difference. The federal treasury gets its money from taxes. If we undertake to feed up the corn which is on hand, mainly to hogs, it would be quite possible that the price of hogs might drop to half their present prices. If this happened, under the Brannan Plan, about half the price that farmers would receive for their hogs would come in the form of a government check.

A thing which I feel our labor friends have not taken into account is just where this would leave agriculture. It would leave the farmer dependent upon direct appropriations from taxes for a part of his income. There are increased demands for taxes. Regardless of what the law may be if it requires paying money out of the public treasury the law is no stronger than the willingness of Congress to appropriate money to support that law from year to year. We need to consider what is likely to be the attitude of Congress under conditions of unemployment.

This problem also touches on our whole national debt situation. It may not be popular to even mention debt, but if our national debt were equally distributed it would amount to about \$1,700 per person, or \$8,500 for a family of five. Most of us have worked too hard getting rid of a debt of that kind to treat the matter lightly. Recently a committee of economists meeting in Washington recommended the reduction of deficit spending in prosperous times with the expectation of carrying on deficit spending in periods of depression. Just at present, even though 60 million people are employed, we are following a policy of deficit spending.

Recognizing the situation we are in, with large supplies of farm products accumulating in the market, I feel that agriculture needs some kind of price or income support. I feel, however, that too high a support level may lead to some serious unbalanced situations which may further encourage the accumulation of surpluses. In our present situation I believe

the theory of a price support floor under agriculture at a reasonable level is sound and in the interest of our national economy. I believe this floor should not be so high that it will not permit supply and demand to guide production much of the time and thus reduce government controls. I do not know how we will stimulate personal initiative without letting the price in the market place serve as a stimulus for personal initiative. I am fearful that if we give way to government controls, especially in an industry as fundamental as agriculture, we take a big risk of losing the individual initiative which has made not only agriculture but our whole economy the best of any country in the world.

H. C. M. CASE

LESSONS FROM OUR AGRICULTURAL PRICE PROGRAMS

Agricultural prices began their post World War I break 30 years ago. This was the stimulus for a growing concern over agricultural prices and income among farm people. Before that time we had had some support for wheat and hog prices to encourage high production during the war period. Since then we have tried several different measures for improving agricultural well-being through supporting prices. We also have had experiences with price ceilings.

Our experiences with agricultural price policy suggest a tendency for future policies and programs to be based, in part, on the experiences of the present. This has its good and bad features which will not be discussed here, except to point out that it presently finds us operating in a postwar period of relative prosperity under agricultural price support programs which are a blend of "depression aid" and "war stimulus" programs. This tendency for today's programs to form the foundation for tomorrow's programs is likely to continue. Therefore, we should be vitally concerned with learning all we can about the tools we have used to help attain the objectives of our policies. Have these tools been suitable for the jobs we would have them do? Or do they need to be sharpened, repaired, or perhaps discarded? Has the past taught us anything about such things? I think it has. Have we done a good job of studying and learning our lessons? I am not so certain about this.

What has been the trend in the level of support prices? Since 1933 we can see a definite increase in the percentage of parity at which agricultural prices have been supported. For example, the loan rate on the 1933 corn crop was 45 cents per bushel which was about 55 percent of the parity price at harvest time. It was 55 cents in 1934 or about 65 percent of the parity price. The loan rate had increased to 85 percent by 1941 and to 90 percent of the parity price in 1942. This level was in effect

during the war and has continued to the present time. With the parity concept having acquired a certain sacredness it is difficult for us to adjust our thinking to a program which calls for supporting prices at a level very far below 100 percent of parity. However, we cannot expect prices to be supported at as high a level for a large crop as with a small crop. The Agricultural Adjustment Act of 1938 recognized this principle by providing that the support prices of corn vary between 52 and 75 percent of parity depending on the size of the crop. The Agricultural Act of 1948 extended the use of this principle, and the 1949 Act retained it but does not permit it to operate until 1952.

Farmers, like all business men, do not like the idea of accepting lower prices than those previously received. However, our experience clearly shows that ever-increasing prices and high-support prices that seem to be in the short run interest of farmers may soon lead to undesirable conditions or regulations.

What happens if support prices get too high? We know that high prices stimulate production. We expect this in a free capitalistic economy. We made widespread use of price floors to stimulate farm output during the past war and to a lesser extent in World War I. Farm production in the United States during the war years, 1942-1945, was 28 percent above the 1935-1939 average. But agricultural products must be consumed to be effective in maintaining and improving our standard of living. Support of prices at a level which is high relative to what they would be without supports will result in one or a combination of two or more of the following three conditions: (1) accumulation of surpluses; (2) government purchase and resale at a lower price either domestically or on foreign markets; or (3) crops not being harvested or destroyed once they are harvested. Past programs have taught us that the existence of burdensome supplies is a depressing factor on the market. Unless the level of support is decreased as surpluses pile up there is an increasing gap between the market price and the support price. Government purchase and resale at a lower price or making up the difference between the market and the support price is a costly operation. Furthermore, dumping of our products on the markets of other countries is a hindrance to increasing export outlets for farm products. Destruction of farm products has proved to be an unpopular method of supporting prices.

What happens if the level of support of different prices gets out of line? Our experience has shown that it is not easy to keep prices of different commodities adjusted to get an even flow of them into consumption. One illustration in the current situation is the present loan rate on corn at 90 percent of parity which does not encourage breeding and feeding of hogs with the uncertainty of the level of support of hog prices

during the next year. With both corn and hog prices supported at 90 percent of parity the hog-corn ratio would be about 11 to 1. This is not sufficiently favorable for the feeder to rapidly encourage many farmers to feed their corn to hogs in preference to "selling" it to the government.

Have we learned how to dispose of surpluses? If there is anything we have learned from our past price programs it is that we do *not* have an acceptable answer to the question, "How do we dispose of surpluses?" Yes, they have been disposed of but not in a satisfactory manner. The war provided an outlet for the accumulations of the late 1930's. But few people think that we should have wars to perform this function. The food stamp plan and school lunch program have been of some aid but we have a long way to go in perfecting these combination nutrition-price support measures to make them effective as means of disposing of surpluses.

Our greatest difficulties have arisen with perishable products. Because they can be stored for a very limited time we can get into trouble faster with them than with the commodities which can be stored for several months or years. The problem has been particularly acute with commodities such as potatoes where technologies and practices have been applied which have resulted in marked increases in yields. However, Illinois grain producers should not feel that a very similar situation could not possibly arise with their products if the support prices are held high relative to costs of production and to the prices of livestock.

Have we learned to control production? Illinois farmers have had several years of experience in attempting to control production through use of acreage allotments. A recent release from the Production and Marketing Administration states, "Farm acreage allotments for corn are being used in 1950 in the commercial corn-producing area . . . as a guide to help farmers cooperatively adjust production to requirements." What do past programs teach us? The 1930-1932 and the 1940-1942 acreages and production of our common Illinois grain crops give some interesting facts:

Crop	Acreages		Percent change	Production		Percent change
	1930-32 average (000 acres)	1940-42 average (000 acres)		1930-32 average (000 bu.)	1940-42 average (000 bu.)	
Corn.....	9,603	7,696	-20	342,833	384,961	+12
Oats.....	4,337	3,397	-22	151,855	146,525	-4
Wheat.....	1,932	1,481	-23	37,273	28,808	-23
Soybeans.....	409	2,524	+517	7,478	51,066	+583
				(000 tons)	(000 tons)	
Four crops.....	16,281	15,098	-7	13,372	15,520	+16

The first period was before we had acreage allotments — the latter one in which we had acreage allotments. We were successful in reducing corn, wheat, and oat acreages by about one-fourth to one-fifth by individual crop and "total soil-depleting" allotments. But soybean acreage increased more than fivefold. We had seven percent less acreage of the four crops during 1940-1942 than ten years earlier. This illustrates what happens when the acreage of one crop is controlled without limiting the acreage that can be planted to a competing crop.

It is not the acreage planted or harvested, but the production that keeps or fails to keep production adjusted to requirements. Illinois corn production increased 12 percent during the ten-year period in spite of the 20-percent decrease in acreage. A 40-percent increase in yield was responsible for this. Oat production declined much less than acreage. The decrease in wheat production corresponded to the change in acreage, and increased yields of soybeans accounted for an even greater increase in soybean production than in acreage. One must not conclude from the Illinois figures shown that the program for controlling wheat production was effective as we were producing about one-fifth more wheat in the United States in 1940-1942 than in the pre-allotment days. If we compare the weights of the four crops we find that there was 16 percent more of the crops produced in 1940-1942 than in 1930-1932.

These figures do not prove that acreage allotments were wholly ineffective. Production might have been even greater without them. However, these data indicate that the type of acreage control which we had during the 1930's was not adequate to control production with many technologies and practices being applied in farmers' efforts to offset low prices with high production or to obtain maximum income from limited acreages of individual crops.

Are Illinois farmers willing to accept rigid controls? Our experiences do not provide the answer to this question. We have had nominal controls but there have been other alternatives, such as the opportunities to grow and market more from less acres or to shift to other crops. A small portion of Illinois farmers had one year's experience with wheat marketing quotas. There was considerable dissatisfaction with the program; however, this does not provide a basis for answering this question. This is but one of the many unanswered questions that farmers and farm leaders should and must think about, and find the answers for, if we are to have agricultural policies and programs which are in the best interest of agriculture and of the entire nation.

W. N. THOMPSON

THE INTEREST OF CONSUMERS IN AGRICULTURAL POLICY

Consumers in the United States have reason for being interested in national farm policies. Many industries are largely dependent upon raw materials from agriculture. Of even greater importance, however, is the fact that citizens supply their food and clothing needs from farm production.

There are at least eight centers of consumer interest in the farms of the nation:

A nation with farm surpluses has advantages. American consumers have a concern in the continued production of exportable farm surpluses. Europe secures many of the supplies she must import from Canada, Australia, Argentina, or other countries. Agriculture in the United States, however, will continue to be in better condition if we maintain exports of farm products to European and other areas. This refers to products to which, in the absence of artificial handicaps, our land resources are suited. If it became necessary to import food supplies from other countries, there would probably be higher food costs in this country. Maintaining an export farm trade helps us to be assured of continued adequate production of supplies for our own use.

Use by this country of tariff barriers on goods which our farmers need as producers for export or the adoption of any other policy which would reduce farm output from an export to an import basis will not contribute, in the long run, to the satisfaction of our consumers.

Abundant supplies of and reasonable prices for foodstuffs, in which we have a comparative advantage over other countries because of soil, climate, technical development, and human resources, have a twofold effect. First, there is the obvious advantage of providing food at reasonable prices to fit the family budget. Secondly, low costs per unit of producing food and other agricultural raw materials place our producers of both farm and non-farm goods in more favorable position in world markets. The high level of farm and city wages in this country tends to obscure this advantage. High wages are usually offset by high production per worker. In comparison with other countries, our foodstuffs and agricultural raw materials are relatively cheap in terms of the wage-earner's pay envelope. This has its effect upon the total economy. Many of our factory products are more competitive in world markets because food and other basic items are relatively cheap in this country compared to the wage rates and the output of our workers.

War might put premium on full farm production. A second major stake that consumers will continue to have in American agriculture, at least until the goals of the United Nations are attained, is its importance

in national defense. The tendency for American farmers to operate areas mostly at some distance from the seacoasts and from centers of population is wholesome in case an enemy should attack us. Our farmers have power to expand production, especially in humid sections, and to keep supplies rolling to consumers in any part of the country. In some countries there is much more concentrated dependence upon railroads for feeding cities. In this country, however, we have networks of railroads and also of all-weather highways. If large-scale scattering of our urban consumers into smaller centers were to become a matter of strategic need, independent farming units in large numbers in the various parts of the country would enable consumers to be fed.

Abundant food for youth is a sound policy. Consumers have reason to recognize that abundant farm output and some experience in producing and marketing it is essential in the development of young people. Any country finds it difficult to keep a good supply of food to all elements of the public. Persons who provide inadequate food for their families because of misdirecting their income or through lack of knowledge of proper practices create consumer problems. School lunch programs have met a need in supplying more adequate food to underprivileged and other young people. A nation such as ours, however, may wisely promote nutritional programs for its people.

Conservation farming is aided by farm prosperity. Consumers, who at this time have such a vital interest in the products of agriculture, have an equal though frequently unrecognized interest in maintaining and improving the productivity of our land. Space does not admit a discussion of how this consumer interest in the conservation of our natural resources shall be made effective. Land owners and land users are rapidly acquiring knowledge of improving techniques and because of their personal interest will use some of the profits of farming in the further upbuilding of their farms. Experience proves that nothing discourages the protection of our resources more than low farm incomes. Consumers, therefore, have a direct interest in providing the necessary basic conditions for encouraging the economic conservation of resources.

Abundant American production is a world boon. American consumers profit from the ability of our country, when needs become great, to provide food and other agricultural raw materials on a lend-lease or gift basis to neighbor countries which, because of war or other disaster, are unable to meet their own needs. Humane considerations have always been taken seriously in the United States. Disagreement will arise over the extent to which federal income taxpayers as a group should take the responsibility of meeting the costs of such foreign shipments. Few are

likely to favor use of such programs to an extent that would impoverish our own country. On the other hand, our surplus may be a means of assisting other countries which are in need of supplies at present, and which are setting afoot processes for expanding their own farm production.

Non-stop production by farmers deserves imitation. A sixth reason why American consumers may prize the way in which American farmers do things is the usual disposition of the latter to keep their products moving to commercial channels daily and seasonally, even when the volume of industrial products sent back to the farms in return has become small, as it has in times of farm depression. There have been few cases of farmer strikes. Where milk strikes have occurred, the care of the cows on the farms has continued, the stoppage being one not of production but of marketing through whole milk channels. Disputes between employers and workmen in milk delivery service has sometimes stopped market movement of milk. Apart from an occasional farmer-initiated halting of whole milk supplies to a city, the consumers of farm products have usually counted upon the farmers providing supplies about as amply as is consistent with weather conditions and the controls imposed by law.

Farmers have tended to maintain marketable supplies as prices received and other conditions have permitted. The tendency of American farmers to carry on through thick and thin, even at times when they seemed to be "subsidizing" consumers of farm products with excessively cheap supplies, has set a good example for city groups concerned with labor-management problems. It is hard for many farmers to feel that employers and employees in mines, factories, and elsewhere have done their utmost to show equal loyalty to production.

There are at least some farmers who would like to see American consumers generally benefit from a non-stoppage or continued-production provision written into labor-management contracts. The employees would agree not to take collective steps to slow down or stop work. The employer would agree not to initiate a lockout or to reduce abnormally his labor force during a controversy. Under this plan both would agree that during a controversy the non-stoppage strike procedure would be followed. A violation of this agreement by either party would constitute an unfair labor practice. Features of such a contract have been developed by Professor George W. Goble, College of Law, University of Illinois, and following his presentation of these ideas before a committee of the American Farm Bureau Federation in December 1949, that organization took a stand favoring a labor-management study of the feasibility of legalizing the inclusion of non-stoppage strike provisions in collective bargaining contracts, substituting money penalties for work stoppages

and lockouts.¹ If management and men would exploit with even moderate success the continuance of production while each tries to get better terms for its side, they would introduce into non-farm activities more of the consumer-benefiting adherence to production that has long been characteristic of farmers.

Public sponsoring of farm production may grow. In the light of consumer interest in a vigorous American agriculture, it is not surprising that the majorities in previous years have stood behind moves made by and in behalf of farmers to provide improved credit, insurance, research service, and the like. Developments of these kinds have sometimes seemed to consumers to be as basic to their own interests as to those of the farmers themselves.

In keeping with this tendency, it would not be surprising if some groups of consumers, interested in better and more abundant meat supplies, should demand to know, for example, whether producer risks in the livestock industry may not be reduced through a system of risk-spreading or of getting part of the risks underwritten at the national level. With increasing supplies of grass and legumes, as some staple crops have their areas held in check, livestock growers may have timely need for assurances. The futures markets have little to offer livestock producers for direct hedging of more than a fraction of their risks. Meat-animal feed-expense recovery insurance to aid ventures of capital and labor in cattle feeding seems to be a good field for experimentation.

Can non-commodity experience light the way for commodity plans?

More direct efforts may be made for using farm products as instruments of national policy. Two purposes may be (1) to keep consumer outlets large for farmers and (2) to make more moderate the prices required of consumers. Some might turn by way of example to two developments that occurred shortly before the first world war. Consumers of services of banks, notably the credit services, had then, as now, some points of similarity to consumers of farm products. There were local and regional surpluses and deficits, and the channels between were expensive to use. The Federal Reserve Bank system was added with not too much constructive cooperation on the part of the producers of loan funds or of those generally in charge of banking services. Opposition even to the 12-district system of regional banks was almost unanimous among certain groups. After a few years of demonstration of how a regionalized system operated over and between banks, criticism largely disappeared.

Developments in the field of farm real estate credit (Federal Land Banks in 12 districts) and in some other fields illustrate further that

¹ The Nation's Agriculture, 25, 2 (February, 1950), page 19.

where adequate attention is paid to the differences that separate one part of our large country from another and where standards of competence become progressively raised, users of credit can benefit from a nationwide system. It is well to note that the United States contains as great a diversity of interest as all of Europe, but wise administration of these vast systems has done much to make the country effective in producing farm and other products.

While it does not follow that farm products can be used as instruments of national policy in a completely parallel way to credit, for example, consumers may take the saddle no less than intermediaries and producers. The contributions of consumers to the direction and form of national policy may be constructive. They have an advantage in being distributed over the nation in a different way from the producers of any one kind of farm product. They are income taxpayers, some in a large way but mostly in a small way, and may reflect more tolerance of constructive social change than those who think too exclusively in terms of capital instruments, important as they are. They have a long tradition of not killing geese that lay golden eggs and may even be assumed to have reasonable ideas as to how to get the eggs to be bigger and better.

Education of consumers has made much progress. Farmers should favor further education of consumers. This is not merely because, politically, it is important to "educate the masters." For farmers, too, are consumers of one another's products no less than of fabricated goods into which farm products enter. Informed consumers, whether in the city or in the country, have ballot power to change preferential treatments that in the past have placed producers of farm products at a disadvantage and to redirect policies at the national and international levels so as to serve the joint interests of producers and consumers.

To explore in a broad way the grounds for concern which American consumers have in abundant American agriculture it has seemed helpful to bring out eight points. These may be recalled by the following:

1. A national farm producing plant as ample as would exist in an unfettered economic and political order would be none too large for the United States.
2. In case of attack the productive plant of agriculture, having a wide geographic distribution throughout the country, has advantages in making food available to non-farm people.
3. Abundant food for youths as well as for those at the working and family-building stage of life helps to keep us prepared for peace or war.
4. Farming resources worked on a conservational basis have present and future importance to consumers as well as producers.

5. Food and agricultural raw materials may help this country build relationships among nations that may turn the tide toward just and lasting peace.

6. Federal fostering of services of credit and insurance has brought benefits to consumers.

7. Consumers may wisely promote non-stoppage procedures in employer-employee relations, thereby making both farm and non-farm products more abundant.

8. The decentralized plans used in federal non-commodity systems, such as Federal Reserve Banks, Federal Land Banks and others, would have some guidance value if a system of direct subsidy to all consumers were to be organized around farm products. Most economists do not now argue for the need for such a system. Increased inflationary tendencies can so reduce the purchasing power of non-farmers whose incomes fail to rise in proportion to the cost of living that their interest in direct subsidies may increase. Growers of farm products for export, if their costs of production stay high as their gross returns from foreign sales shrink, might have a similar interest.

C. L. STEWART

THE INTEREST OF FAMILIES ON NON-COMMERCIAL FARMS IN FARM POLICIES¹

To draw a line between farm families who are on standard commercial farms and those who are not is no simple job, but it is one that must be done. The Census of 1950 is being taken in such a way that farmers can be classified more clearly than the sample census of 1945 or any preceding census made possible. Even the little work that has been done up to now will convince anyone that it is a mistake to count all farmers alike. Differences in their economic setup are such as to affect their responses to national agricultural programs and their attitudes toward policies.

Farms other than standard commercial farms have qualities to be prized and are in notable numbers. On some of these farms are part-time operators and one or more of the family members work on other farms or in nonfarm occupations. Not all part-time farms are of small scale. The census recognizes small-scale farms where there is little or no nonfarm work done by the operator, that is, farms that use nearly all of the operator's time, but are still not large in volume of products raised. In some cases small-scale and part-time farms have been operated by persons receiving old-age assistance or pensions because of services

¹Adapted from a talk given by C. L. Stewart during Farm and Home Week, University of Illinois, February 9, 1950.

previously rendered. Then, too, there are farms operated by institutions of the county, state, or benevolent groups. Also some farms that are such in name only have crept into the census of agriculture because the value of products raised has been reported to be at least slightly above the low line drawn by the census, which in 1945 was \$250.

The farms that are here grouped together outside the circle of standard commercial farms are occupied by families which in average size are slightly under the latter group. This does not mean that there are no families with full sets of children on these unusual farms. While some of these farm families have numerous children of school age, in other cases the families shown are small. Many of these farms are operated by persons beyond the family-building stage of life.

In an average Illinois county in 1945 there were 2,000 farmers, but only 1,460 of these could be counted as standard commercial farmers. The number of other farmers per county was 540 in Illinois, or about two-thirds as many as in the average county in the rest of the country. When the 27 percent of all farmers that are "non-commercial" are totaled for Illinois they make 55,000 or only slightly over 2 percent of the 2,500,000 "non-commercial" farmers in the United States.

The non-commercial farmers of Illinois, while occupying 27 percent of the farms, had only 9 percent of the farmland, and when the harvested crop land is counted by itself, had only 5 percent of it. They had only 1 percent of all combines and 1 percent of all milking machines. The value of the ordinary field crops of 1944 sold by these farmers was 1 percent of the state total of such crops. In dairy products they sold 2 percent; in fruits and nuts, 2½ percent; in vegetables, 3 percent; and in forest products, 4½ percent. When one includes the value of products of the farm used in the households of the farm where produced, the non-commercial farmers grew 3 percent of the state's products; but when only products sold are counted, they grew only 2 percent.

So 27 percent of the farms in Illinois in 1945 had just 2 percent of the value of the state's commercial farm products to show for their farm activities. In products raised for use in their households they produced 8 percent of the state total.

Many of the farmers who are not standard commercial farmers raise much of their food supply, that is, make a fair approach toward having subsistence farms. Nearly all of them occupy houses outside of the corporate limits of cities. The tax burdens on such residences have often been less than for similar properties in town. Some of these farmers have sought rural residence with an eye not only to economy but to conditions regarded as favoring natural development of their children. Not all of these unusual farm families look to the wages of members employed

outside of agriculture, but many of them do. Conditions of employment in nonfarm occupations may have a distinct meaning to them, not so much by the effects upon prices of the farm products they raise, as by the favorable effects upon their disposable income. In using this income they cannot overlook the fact that high prices they have to pay for the products of other farmers may affect their standard of living no less than the high prices they face for other items in their cost of living.

The needs of other than standard commercial farms for real estate credit have not been overlooked by the Federal Land Banks and other agencies. "Prudent" loans were long made available by Federal Land Banks on a basis that recognized residential values in the property and income from other sources than the farm itself as being entitled to some weight. The availability of low-interest loan funds from the land banks and other federal agencies is one form of subsidy not unlike that which is available to standard commercial farmers. The importance of applying such loan funds for the building and improvement of dwellings and for other purposes in farm real estate development is generally conceded.

The nation has a resource in the children coming up in the families occupying many of these unusual farms. These children do not all have opportunities for reaching maturity without handicaps.

Programs directed toward these families may have a different setting from some other farm programs. Programs that put emphasis on sustained prices of farm products do not so clearly apply to most of these families. They may benefit more from programs providing advisory services in housing, food-raising and preparation, recreation, and health. Scholarships and other aids to farm youth needing to continue schooling to higher levels could help the nation get the benefit of intellectual leadership waiting to be developed in some of these families. The families on many of these unusual farms may well receive attention around many cities and in many wooded and other backward local areas.

C. L. STEWART and W. J. FOREMAN

Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. ⁹ Federal Reserve Bulletin of Federal Reserve Board. ¹⁰ Preliminary estimate. ¹¹ Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹² Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.

H. P. Rusk

Director, Extension Service in
Agriculture and Home Economics

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CHAMPAIGN

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production ¹⁰
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-39
1934.....	93	86	76	96	79	68	71	80	68	75
1935.....	99	104	102	99	89	80	81	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	306	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	247	275	207	383	392	189	303	351	192
1949.....	192	218	218	200	345	351	176	308	326	176
1949 Jan.....	199	227	231	204	356	326	160	309	346	191
Feb.....	196	221	219	201	266	303	151	307	340	189
Mar.....	196	226	226	204	293	346	170	306	333	184
Apr.....	195	224	224	203	275	321	158	308	319	179
May.....	193	225	220	202	288	309	153	308	313	174
June.....	192	222	221	201	306	328	163	306	316	169
July.....	190	219	217	200	326	366	183	306	313	162
Aug.....	190	214	218	199	363	293	147	308	323	170
Sept.....	191	215	224	198	392	287	145	309	335	174
Oct.....	189	210	213	196	471	608	310	306	321	166
Nov.....	188	206	207	196	457	393	200	308	316	173
Dec.....	188	204	202	196	349	325	166	312	332	180
1950 Jan.....	188	204	201	199	339	379	190	321	...	183

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			Feb. 1949	Current months, 1949-1950		
	1935-39	1948	1949		Dec. 1949	Jan. 1950	Feb. 1950
Corn, bu.....	\$.66	\$1.89	\$1.17	\$1.12	\$1.18	\$1.18	\$1.18
Oats, bu.....	.31	.94	.63	.66	.70	.69	.69
Wheat, bu.....	.86	2.23	1.91	2.02	1.97	1.96	1.97
Barley, bu.....	.62	1.58	1.07	1.15	1.08	1.11	1.06
Soybeans, bu.....	.90	3.20	2.19	2.06	2.14	2.14	2.15
Hogs, cwt.....	8.52	23.71	18.62	20.00	14.80	15.00	17.00
Beef cattle, cwt.....	7.88	24.77	21.57	19.50	20.00	20.00	21.20
Lambs, cwt.....	8.36	23.44	23.36	22.10	20.00	22.00	24.00
Milk cows, head.....	58.00	194.17	198.33	200.00	200.00	205.00	205.00
Veal calves, cwt.....	8.66	26.29	25.77	27.70	21.60	26.30	27.00
Sheep, cwt.....	3.58	8.93	8.70	8.50	8.40	9.70	10.00
Butterfat, lb.....	.27	.73	.58	.61	.59	.60	.60
Milk, cwt.....	1.68	4.48	3.48	3.65	3.75	3.60	3.50
Eggs, doz.....	.19	.42	.40	.37	.35	.26	.26
Chickens, lb.....	.15	.30	.27	.30	.22	.21	.23
Wool, lb.....	.25	.42	.42	.41	.42	.42	.42
Apples, bu.....	1.08	2.33	2.38	3.20	1.65	1.80	2.00
Pow. ton ¹³	9.39	29.64	22.68	25.40	22.00	22.00	21.90

¹⁻¹² For sources of data in tables see preceding page.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. H. P. Rusk, Director. Acts approved by Congress May 8 and June 30, 1914

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ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS

College of Agriculture · University of Illinois · Department of Agricultural Economics

G. L. Jordan, Editor

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Articles in This Issue

	PAGE
The Domestic Economic Outlook — E. J. WORKING.....	961
The Outlook for Foreign Markets for United States Farm Products — L. J. NORTON.....	968
Suggestions for Efficient Use of Labor and Equipment — J. E. WILLS..	973
Getting Started in Farming With Limited Capital — F. J. REISS.....	977

THE DOMESTIC ECONOMIC OUTLOOK¹

Like 1949 and early 1950 the next several months promise to be a period of readjustment in our domestic economy. But partly because this year started with a changed pattern of prices, production and stocks, the readjustments of 1950 will be different from those of last year.

In January, 1950, wholesale prices of farm products were about 10 percent lower than a year earlier and more than 20 percent below January 1948 (Figure 1). For the present the decline has been stopped, and although there may be some renewed weakness in prices during the latter part of the year there appears to be no prospect of any severe deflation. The reasons are to be found, not so much in agricultural price supports as in the general economic outlook — in the prospects for business activity, consumer incomes, and so on.

Changes in the general level of agricultural product prices may result from a variety of causes. One cause is changes in agricultural production. Important as this often is in affecting prices of individual products, it is a minor factor in causing changes in the average level of farm product prices. Year-to-year changes in the aggregate farm output are ordinarily quite small. Furthermore, since the output of the past two years has been abnormally large and some acreage restrictions are in prospect it seems unlikely that farm production will increase this year.

Changes in demand have been the most important cause of changes in the average level of farm product prices. Indeed, if we include the

¹ Adapted from a talk given during Farm and Home Week, University of Illinois, February 6, 1950.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

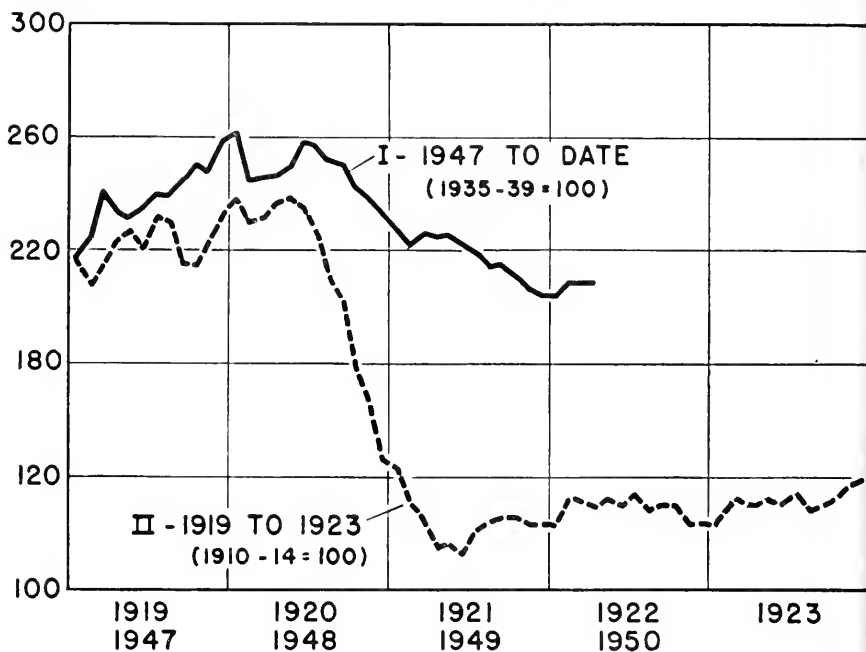


FIGURE 1. — POSTWAR WHOLESALE FARM PRODUCT PRICES (PREWAR = 100)

changing value of money as a change in demand, nine-tenths of the year-to-year change in the average level of farm product prices over the past 50 years can be attributed to changes in demand.

The most fundamental and important fact about demand is that total demand depends primarily upon total production. The greater the total production, the greater the total demand — for agricultural and industrial products alike. Except for income received as charity or similarly transferred, the aggregate amount of income which people of our economy receive is equal to the value of the goods and services which they produce. Hence, income has its source in production. Income is the value of production measured in terms of money, and as we all know, how much money people are willing and able to spend depends primarily upon the amount of their money income.

Demand also depends in part upon the money supply — and by money supply I include not only currency but also bank deposits. An increase in the money supply, whether it be by printing more currency or by increasing the loans or investments of the commercial and Federal Reserve banks, permits an increase in demand beyond current income. Ordinarily, of course, the money supply will be increased only if someone is spending more than his income. Thus, during the war the government was spending

more than it received in taxes. A part of the difference was made up by selling bonds to people who purchased them out of their income, but this was not enough, so the government also sold bonds to the banks who merely deposited the value of the bonds to the government's account. The effect was just about the same as though the government had printed an equal amount of money. New dollar purchasing power was created without any corresponding increase in production. If, on the other hand, bank credit is decreasing the money supply will be reduced and total demand will tend to be less than total income.

Changes in the production of *durable* goods are the major component of our business fluctuations. Their output increases greatly in periods of prosperity and declines severely in periods of depression. A depression is, fundamentally, nothing more nor less than a spasm of underproduction — and primarily of underproduction in the durable goods industries. Furthermore, there is reason to believe that depressions are caused primarily by changes in the production of capital goods — changes in construction activity, in the production of machinery and other manufacturing and business equipment, and in the production of goods for inventory purposes. These changes in the output of capital goods affect employment and incomes and are in turn largely responsible for the fluctuations in the output of consumer's durable goods such as automobiles and household equipment. These are some of the reasons why people who try to forecast business conditions are especially concerned with appraising the outlook for what they call "investment" or "non-consumption" expenditures.

These expenditures may be classified as (1) private investment expenditures, and (2) public investment expenditures. Among the public "investment expenditures" are included not only expenditures for public construction and equipment but expenditures for military purposes. In the effect upon employment and business activity it does not make much difference whether a million dollars is spent for airplanes by private airlines or by the army. Net foreign investment is also included.

After appraising such evidences as I can find as to the prospects for non-consumption expenditures for 1950 I can summarize them as follows:

(1) Private investment expenditures are likely to be about 10 to 15 percent under last year.

(2) Public construction expenditures may be 5 to 10 percent under those of 1949.

(3) Government purchases of goods and services (other than public construction) will be larger.

This approach to business forecasting seems to me to lead to the conclusion that the outlook is not as good as we might wish. Let me emphasize, however, that the indication is for a year of moderate prosperity

rather than one of depression. It suggests another year of readjustment from the abnormal conditions of postwar inflation.

Partly by way of explaining reasons for expecting some decline of private investment expenditures, we may turn to Figure 2. It shows the changes in cash receipts from farming and of corporation profits for the years 1920 to 1949. Corporation profits (after taxes) are shown by the solid line and cash receipts from farming by the dashed line. For both, the 1935-39 average is taken as 100. After a pretty consistent rise from 1932 to 1948 both turned sharply down in 1949. It has been shown by research workers that changes in expenditures for producer's durable equipment can be explained quite well over the past 25 or 30 years in terms of "capitalized" corporate profits for the previous year and the current year, and by machinery costs. High profits relative to interest rates tend to increase expenditures for machinery and other durable equipment. High prices of machinery relative to other goods tend to decrease such investment. The decline in profits and in cash receipts from farming in 1949, and the expectation that business competition will be keener and profit margins smaller again in 1950 than in 1947 and 1948 is part of the reason for expecting smaller expenditures for machinery and other equipment in 1950 than in 1949.

Why did not the decline of prices and industrial production develop into a *real* business depression? A year ago there was fear in some quarters that we would have a repetition of substantially what happened in 1920 and early 1921. Most economists then agreed, I believe, that we would not have as severe declines of prices and industrial production, but declines were under way and there was much uncertainty as to how far and how fast the readjustment or recession would proceed. By mid-summer the danger of anything approaching 1920-21 was clearly past. What were the factors responsible for the different development of the two situations?

In looking for an answer to that question, I suppose that most farmers and other people concerned with farm product prices will think of our agricultural price supports. No doubt these had an influence in limiting

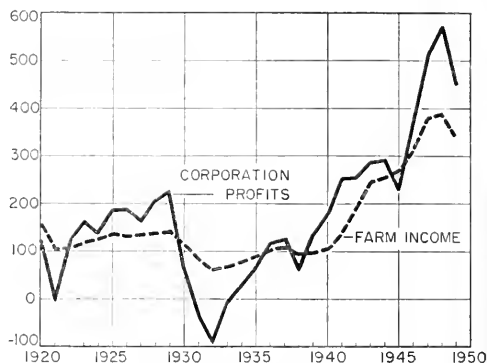


FIGURE 2.—CASH INCOME FROM FARM MARKETINGS AND CORPORATION PROFITS

price declines but, in my opinion, they were the least important of several factors. Not very many of our agricultural prices have been supported, and for most of the supported products, prices would not have declined much more than they actually did in the absence of price supports.

Another, and a very important factor, is the changed banking and credit situation. In 1920 bank credit was being tightened. Our gold stocks had begun to decline during the latter part of 1919 and gold reserves fast approached the then prevailing legal minimum. The Federal Reserve Bank discount rate was raised three times until it reached 7 percent. Contraction of bank loans was being urged by the federal reserve authorities. All this is in sharp contrast to recent credit conditions. Although some hesitant steps were taken to discourage bank credit expansion while prices were still rising, the federal reserve discount rate is only 1½ percent. Reserve requirements can readily be lowered if there is need to expand credit. In short, the only reason that credit might be restricted now or in the foreseeable future would be to restrain rising prices.

Another very important difference in our present situation is our social security system. Unemployment benefits—not including veterans unemployment payments—amounted to nearly one and three-quarters billion dollars in 1949. Add to this veterans unemployment payments of nearly 400 million dollars and you have total unemployment benefits by the government running up to well over two billion. Even the direct effect of such payments was important in maintaining the level of personal income and there were indirect influences through maintaining a higher level of employment and output than would otherwise have prevailed.

Not only the total amount of government payments, but also the method of financing such payments is important. I shall not here discuss the difficult problem of why it is possible, under certain circumstances, for the government to take away purchasing power from some groups through taxes, and increase industrial employment and production by turning that same purchasing power over to other groups. But it is generally much more effective if the government gives purchasing power to certain groups *without* taxing away a corresponding amount of purchasing power from any other group or groups. That is what has been happening in the past year. The federal government has increased its payments to people and it has at the same time reduced the amount of money it has collected as taxes. This is, on a smaller scale, the same thing as was done during the war. It is called deficit financing. At a time when there is full employment and the deficit is largely financed by bank credit it leads to price inflation. When there is not full employment, on the other hand, it may increase the levels of employment and output (above

what they otherwise would be), and if the deficit is financed without bank credit expansion it may prevent deflation rather than cause inflation.

The term "compensatory fiscal policy" refers to the policy whereby the government plans to increase payments to people or to reduce tax collections from them, or both, when depression threatens. In other words, when private investment expenditures fall off the government attempts to compensate for this through its fiscal policy and thereby maintain employment and production at a high level. This is the sort of policy our federal government has been following — though perhaps not very consistently. Nevertheless it is clear that in time of recession tax collections tend to go down and unemployment payments increase. For three successive fiscal years the cash operating income of the U. S. Treasury exceeded its outgo, but this year there is a deficit. Income was greater by 6.7 billion in the fiscal year ended June 30, 1947, by 8.9 billion in the following year, and by 1.1 billion in the year ending June, 1949. For the first seven months of the current fiscal year, on the other hand, there was a cash deficit of 1.6 billion dollars.

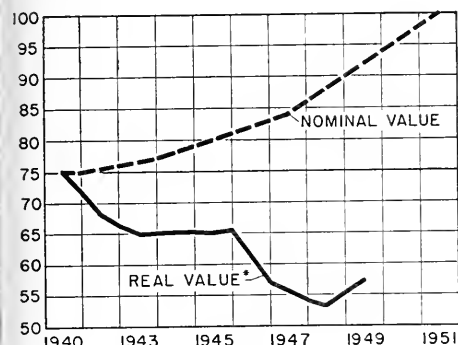
This deficit financing of 1949-50 is in sharp contrast to 1920-21 when — as in the preceding year and in the nine following years — there was a budgetary surplus.

Though we may give deficit financing a part of the credit for 1949 not having developed into "another 1920," we must recognize that a compensatory fiscal policy carries with it some very serious dangers. Formerly, the idea that an annually balanced budget was necessary for the government to be financially sound served as a check to extravagant spending from the Treasury. A Congress which increased appropriations was expected to provide for increased tax revenues, and a Congress which reduced taxes was expected to curtail appropriations.

With the acceptance of the doctrine that the budget need not be balanced each year, there is no longer so close a connection between increasing appropriations and increasing taxes. There is danger that we may have lost the sense of political urgency necessary to curtail public spending and that we shall fail to attain a budget which is balanced in the long run. There is the danger that the budget will be either perennially unbalanced or that there will be a budget surplus only in the years of exceptional prosperity and more frequent deficits which would result in a continually mounting public debt. Such a long run lack of balance in the federal budget would presumably result in a slow "creeping" sort of inflation. Such an inflation would certainly be less serious over a short span of years than that we have had recently. If continued over any long period, however, it could scarcely help but be a serious handicap to the operation of a private enterprise economy. It might well be as severe a

blow to the preservation of our economy of private enterprise and competition as would a period of severe depression and deflation.

One aspect of the bad effect of inflation is illustrated by Figure 3. It shows the redemption values of a \$100 U. S. savings bond bought in



* In dollars of 1941 purchasing power.

FIGURE 3. — REDEMPTION VALUES OF A U. S. SAVINGS BOND PURCHASED IN JULY 1941

ceeds. Thus in December 1949 the \$94 for which one could redeem the bond would buy only as much of consumer goods and services as \$59 would have bought in 1941. If we have a long-continued depreciation of the dollar what would it do to your willingness to loan money to the government — or to anyone else?

To avoid any misconception we should note that the depreciation in the real value of a government bond is no different from the depreciation in the real value of any other bond or debt. It is the result of the depreciating value of money.

The long-term outlook for the price level is, then, uncertain, largely because of uncertainty of how our federal finances will be handled in the future. Perhaps a good guess at the present time is that the price level in the next six or eight years may average only a little lower than it is now. This is based on the assumption — the not altogether confident assumption — that we shall not be in another war during that period.

We shall have to contend with strong deflationary forces when we adjust production and both domestic and foreign trade to normal peacetime conditions. But these deflationary forces will be countered on the one hand by strong resistance to wage rate decreases and even by continuing pressure — both political and nonpolitical — for some wage rate increases. Then too it seems certain that strong efforts will be continued by the federal government to prevent the development of any considerable degree of unemployment. These will likely include deficit

July of 1941 for \$75. The dotted line, which rises rather gradually from \$75 in 1941 to \$100 in July 1951, represents the nominal value of the bond — the value in dollars of current purchasing power. The solid line, which extends only to July 1949 represents the *real* redemption value — the value in terms of dollars of constant purchasing power, or in terms of the consumer goods and services which one could purchase with the redemption pro-

financing whenever a recession threatens. If such deficit financing is done sparingly and handled expertly it will result in a stable price level. If it degenerates into financial irresponsibility on the part of the government, further inflation will result. If the deficit financing is handled inexpertly it will result in price and other economic instability even if there should be no general inflationary trend.

E. J. WORKING

THE OUTLOOK FOR FOREIGN MARKETS FOR UNITED STATES FARM PRODUCTS¹

Exports of United States farm products will decline from recent high levels but will continue in fairly high volume. The reasons why they will decline are: (1) fewer dollars will be available and (2) supplies in other areas will increase. The reasons why exports will continue at a relatively high level are: (1) we will have surplus supplies above our own needs; (2) other people will need them; (3) our prices will be relatively cheap at least for some things.

The greatest potential customer is Western Germany. How they will pay when our aid ends is a question. In 1948 Germany took 22.4 percent of our agricultural exports.

Where do our agricultural exports go? Western Europe took 63.6 percent of them in 1938 and 60.5 percent in 1948. This area is our biggest customer. Asia and Oceania took 12.8 percent in 1938 and 19.2 percent in 1948. In both periods Japan was our biggest customer. The Western Hemisphere countries took 18.8 percent in 1938 and 16.8 percent in 1948. Africa took .8 percent in 1938 and 2.0 percent in 1948; Europe outside the ECA countries took 4.0 percent in 1938 and 1.6 percent in 1948. The three big markets are Western Europe, taking about three-fifths of the total; Eastern Asia and Oceania, a little less than one-fifth; and the rest of the Western Hemisphere, about one-sixth.

The most disappointing of our traditional markets is the United Kingdom which took 35 percent of our agricultural exports in 1938 and only 5.9 percent in 1948. This may well be a permanent loss. Certainly until the United Kingdom gets her weak financial situation straightened out she will not buy much agricultural produce here except decreasing quantities of cotton and tobacco.

The United Kingdom has been replaced as a major market by Germany which took 4.4 percent of our agricultural exports in 1938 and 22.4 percent in 1948. If we want a big European market for farm products we must cultivate and develop the German market.

¹ A talk given during Farm and Home Week, University of Illinois, February 6, 1950.

Will we maintain the East Asiatic market — now 50 percent larger in relative importance than before the war? The increase has been due to two things: (1) dollar aid extended to Japan, Korea, and China and (2) the disorganization in agricultural production in the areas overrun by the Japanese in the war. I would expect that our dollar aid will be reduced and that agricultural production in the area will rise. Both these developments would tend to reduce our exports. On the other side, population is increasing; some of these peoples are going to make a determined effort to raise their living standards; and this area has means of earning dollars as it is the source of some of our large imports: rubber, tin, copra, tea, jute, etc. Japan will have to pay for her American imports largely by sale of manufactured goods to the producers of dollar-earning raw materials. We may have a rather sizeable market in Eastern Asia if it is not taken over by the Communists.

How about the Western Hemisphere market? In 1938 Canada made up two-thirds of this; in 1948 only about one-fourth. This decline was filled by increased buying by Latin America. In view of Canada's difficulty in selling to the United Kingdom and her dollar position, the trend in growth of trade in agricultural products is likely to be from Canada to the United States rather than in the other direction. The Latin American market will depend on how well the prices of their surplus agricultural products hold up and on the conditions of the markets for their mineral resources: sugar, coffee, bananas, petroleum, etc. As long as these foods and raw materials remain high in price this area will be a good market for our products. This is our garden and we had better cultivate it diligently and industriously.

Africa — a minor market — depends on precisely the same conditions. Will they continue to get favorable prices for the primary staple products which they produce?

Three factors will retard exports. Going back to our major market — Western Europe — there are three key questions: (1) How will the \$4 billion plus of aid we are extending in 1949-50 be replaced. It is scheduled to end June 30, 1952, and to be gradually reduced in the interval. The ECA program has done much good but I agree with the present policy of ending it in 1952. Something like 40 percent of this has gone for agricultural products. It would take a greater optimist than I am to foresee an increase in dollar earnings of \$4 billion in the next two and one-half years.

(2) What will happen to European agricultural production? There is much excellent land and many skilled and highly trained farmers in Europe. I have just spent six months over there and on that point I am positive. Farmers are now hampered by shortages of materials and equipment except for feedstuffs. They have just had two good harvests. Their

agricultural output will rise but the best European opinion is that it will be difficult to attain the prewar level in agricultural output because of a shortage of feedstuffs. My own opinion is that within the next five years European production will be above the prewar level. In the United Kingdom it is now about 40 percent above prewar. But agriculture there was on a much lower level than on the Continent before the war.

But it must not be forgotten that Western Europe has 10 percent more people to feed and to supply than before the war.

(3) What will happen to agricultural output in other supply areas? Europe will buy outside of the dollar area whenever possible even if products cost somewhat more than in the U. S. Dollars are scarce and have so many uses. All over the world projects are on foot to increase agricultural output. Prices of primary products are high. This provides the incentive and also the capital needed to develop both new and old areas of production. Agricultural output is likely to rise. The key areas are in Asia, Oceania, and Africa. Indonesia will likely come back now that a settlement has been made with the Dutch. Manchuria, French Indo-China, and Burma are big question marks. On balance over the next five years I anticipate increased supplies in non-dollar areas.

So all three factors — fewer dollars, increased home production, and probable larger supplies in other surplus areas — point to smaller exports from the United States.

Three factors will help sustain exports. But three things point to continued purchases: (1) The needs of Western Europe are large. (2) Their people strongly desire to maintain and improve the better diet they have achieved in the last two years. They had a pretty bitter time which has ended since the better world harvests of 1948. (3) We will have supplies and they are likely to be cheaper than in other areas. So we will continue to have a rather large market for cotton, tobacco, fats, wheat, and probably feedstuffs. There are no luxuries in that list unless you count tobacco. It rates high as an incentive good everywhere. Europe would like to buy apples, dried fruits, dairy products, and maybe they will — but the emphasis will be on cheap necessities and feeds. I include feeds because, if European farmers and consumers are positive on any agricultural policy, it is to restore livestock production. They hold stronger views on this point than do some of our ECA people who do not see how they can afford it. The most conspicuous feature of European farming is the well-tended manure pile. The working man wants more "honest" food. He is fed up with "ersatz."

A key question is money and means of payment. The ECA and aid-to-occupied-territories funds have temporarily supplied these countries with dollars which they do not have to earn. For 1949-50 these total

something over \$4 billion. A substantial percentage has gone for foods and other agricultural raw materials. These have aided greatly in the economic recovery which Western Europe has achieved in the last two years. The exports of agricultural products financed with these funds have also sustained our markets and delayed fundamental adjustments here. This aid is scheduled to end on June 30, 1952, and to be tapered off in the meantime. My personal opinion is that it should be ended on schedule and should be tapered off. We cannot afford to put Europe on a permanent dole. In the long run it would be bad for them. This is not a criticism of our ECA program. It has done good but it was never intended to be permanent.

What will happen when this aid ends and as it tapers off? Obviously we will sell less. Europe may find some ways to earn more dollars. But it would take an optimist to see how they can increase earnings by \$4 billion. Some part of it may be offset by investments by U. S. business firms, which I think will pick up as peace continues. Some part of the decline in aid may be offset by foreigners bringing capital back from the United States where it has sought refuge. This would require that the residents of certain countries regain confidence in their native lands. It is reasonable to assume that fewer dollars will be available and that we shall export less as ECA tapers off.

Exports will not disappear. Some United States goods are too essential to Europe for that. Which will be most compressible? Which can be eliminated or cut down most severely? This will depend on what Europe considers most essential; which they consider to be the best bargains. In my opinion agricultural products will not take the severest cuts. Machinery will be cut hard. Europe is a tool-building area. We will still sell cotton, tobacco, fats, wheat, and feed grains.

Prices will be very important. When money is scarce people count it. Amongst the midwest commodities in the list above fats are now the most realistically priced and wheat the least by European standards. Last year we exported more fats than in any year in our history. It is an open secret that the CCC is greatly disturbed by the slowness with which United States wheat has moved during the present season. We must realistically price our commodities. *No country in Europe wants low farm prices.* But they are well aware when they are being high-jacked. The International Wheat Agreement countries pay \$1.80 for our wheat. In order to maintain our utterly unrealistic support price for wheat our government now contributes at best 50 cents on every bushel of wheat which we ship under the agreement. Germany does not get the benefit of the agreement price. Presumably the cost of our wheat to her is about \$2.30 a bushel. You ask: We give them the money. So what difference

does it make? That is not the way the Germans or the keen Americans who advise them on food procurement look at it. There are a dozen uses to which each dollar can be put and when a price is too high they look for other sources of supply. To get the record clear the United States government wants Germany and also Japan in the International Wheat Agreement. At the moment the British government is reported to be the principal objector. The British are afraid of anything which might raise the cost of food to them.

We must price our goods realistically. First we must clear our mind of this folderol about so-called parity prices having anything to do with economic realities. Again I repeat, no European farmer or government wants to see low farm prices.

Currency devaluations retard our exports. A factor which will retard exports of our farm products is the wave of currency devaluations which last September swept over Western Europe like an economic tornado. This made all dollar goods more expensive in terms of their national currencies. The fact that we give them the goods makes no difference. All ECA goods are immediately paid for in national currencies when they enter a recipient country's economy. I can best illustrate this by cottonseed meal in Denmark. Say it costs \$60 a ton. Before devaluation of the Danish currency this was equal to about 300 Danish kroner. At the present value of the kroner it would cost 44 percent more, or about 430 kroner. Suppose feed costs went up 44 percent while your livestock or milk prices were level or falling, would you buy more or less feed? The question answers itself. These devaluations will tend to retard our sales of some products.

Suggestions and Conclusions

What can we do to hold exports? (1) Price realistically; (2) favor lower barriers to sale of foreign goods here which will earn them dollars; (3) do not shy away from foreign goods when these can be bought at satisfactory prices; and (4) do not get excited when a few pounds of foreign foodstuffs show up in the U. S. They cannot flood our markets. There are no basic surpluses of agricultural products outside of dollar areas.

Let us look at individual countries. Measured by population, there are four big countries in Western Europe: the United Kingdom (England, Scotland, Wales, and North Ireland), Germany, France, and Italy. France can feed herself and so is not a potential market for many midwest products; Italy is poor and overpopulated even though she now exhibits surprising vitality. She needs some wheat and small quantities of fats and oils. The United Kingdom — our largest prewar customer — is the center

of a great empire and will cut dollar purchases of foods to the bone. Until she settles her financial difficulties, we might as well write her off as a customer. Germany—the biggest postwar taker of our farm products—is our biggest potential customer. The key problem will be payment. Western Germany has 50 million people crowded into an area about the size of the United Kingdom. The U. K. has to import over 50 percent of her food. Germany must import to live. She has lost her best agricultural areas to the Eastern Zone and to Poland. It is likely that she will get less food from Eastern Europe than before the war. She has no overseas colonies as do the United Kingdom, France, and also Belgium and the Netherlands. Her best students of food supply and markets do not see how she can live without North American supplies. In my judgment they are right. How will she pay? Frankly I do not know. The Germans work hard, are well trained technically, and have a capacity for production. How can they convert these facts into dollars? In the answer to that question rests in large measure the outlook for our exports of foodstuffs to our principal potential market in Western Europe.

Let's take a look at the smaller countries. Scandinavia will buy some bread grain, feedstuffs, and fats and oils. So will the Netherlands and Belgium. The Swiss will be most interested in bread and feed grains. Both the Swiss and the Belgians will take some luxury products like fruits. Austria is similar to Germany although smaller and with less potential means of payment. The fringes of the Iron Curtain countries may take some fats. Ireland will take bread and feed grains. But the big potential customer is Germany.

L. J. NORTON

SUGGESTIONS FOR EFFICIENT USE OF LABOR AND EQUIPMENT¹

What can the farmer do to be more efficient in the use of labor, to make his work easier, to reduce labor costs, or to get more from the labor that he puts into his business? Increasing income from crops or from livestock, and increasing the volume of production on the farm—each of these tend to make for more efficient use of labor. However, labor-saving shortcuts that detract from crop and livestock production efficiency, or decrease the volume of production, are not likely to be savings at all.

When labor efficiency is mentioned we all tend to think first of the possibilities of saving labor by the use of machinery and equipment. Actually, of course, labor costs and machinery costs are related and we cannot entirely separate them. It is true that the greatest savings in labor in the past have resulted from mechanization. It is also true that a farmer

¹ Adapted from a talk given during Farm and Home Week, University of Illinois, February 8, 1950.

today has to have a pretty good set of equipment to work with. But many farmers today are too much inclined to look to a new and better machine as the answer to their labor problems. Considering the machinery that most farmers now own or have available for their use, it may well be that the greater opportunity to increase labor efficiency lies not in more new and expensive machines but in a lot of rather small things that all together might be called "better work methods."

Let's look at some of the evidence. Many studies have been made of the time required to do particular jobs by different methods and with different equipment. These studies show that certain machines are definite labor-savers under good or even average management. But such studies usually show that there is as much or more difference between individual farmers using similar equipment than there is between averages of groups of farmers using different equipment. We see such results as these: some farmers with mechanical barn cleaners take more time in cleaning the barn than some other farmers using a wheelbarrow; some farmers with balers or forage choppers require more hours of labor to harvest a ton of hay than some other farmers with hay loaders or even where hay is loaded with hand forks. This is obviously not a complete story, but it clearly indicates that there is more to labor efficiency than the kind of equipment used.

Improving work methods. Improving farm work methods need not be a hit or miss proposition. It need not be merely "trial and error," and a farmer does not have to have a "brilliant idea" or a "brainstorm" in order to make his work easier. Experience has shown that systematic study of work methods will get results in farm work, as it has in industrial work.

Here is a four-step approach by which any farmer can improve his present work methods. Take any farm job — feeding and milking cows, grinding feed, watering hogs, harvesting hay — it will not be difficult to pick out one that takes a long time or seems hard to get done.

First, set down all the steps or details that you follow in performing the job. Itemize just what you do from beginning to end. Make notes on time required for each step, and on distances travelled. For many jobs a sketch of the work area will also help. This sounds like a lot of detail, but it is something that anyone can do and that anyone will find interesting. You will be surprised how many steps or details go into the performance of a single job.

Second, compare your methods and accomplishments with other farmers. Observe how others do the work. If you set down the steps that you follow in a job and observe how others do the work you are almost certain to get some good ideas for making your method better.

Third, question the details or steps of your own method. Ask such questions as:

"Can I do the job in fewer steps, leave out some of the details?"

"Can I combine some of the details or parts of a job?"

"Can I save time or do better work by doing a job at a different time?"

"Are my feeds, supplies and equipment so located that walking and carrying are kept to a minimum?"

"Can I rearrange buildings or relocate lots, doors or gates for greater convenience?"

"Is my equipment adequate and suitable for the job?"

Fourth, develop and apply a new method. Analysis of the job, the first three steps, will result in ideas that are worth while. The fourth step is to organize these ideas into an improved method, one that is easier and better than your present way of doing it.

What I have outlined is a method that can be applied to the improvement of any task. If space were available we would be interested in examples of how farmers have used it to advantage—how one man saved two miles of walking in his daily chores, how another saved two hours a day in taking care of a 20-cow dairy herd, or how another figured that he was spending what was equal to ten working days a year opening and closing a single gate on his farmstead.

Machinery and Equipment

There are two groups of machinery and equipment problems. One deals with getting the right equipment needed for efficient operation of the farm, the other with operating the machinery efficiently.

Spreading overhead costs. The purchase of a complete set of farm equipment requires a large investment. Even on a fairly large farm there is only a few days' use for many machines. Under this situation, overhead investment is a major item in machinery costs, and spreading this overhead over a large amount of use is important in machinery efficiency. This is a particularly important problem for farmers with limited capital. A considerable number of farmers do custom work for other farmers. In this way they are not only adding to their incomes; they are spreading their machinery overhead so that they have the use of good equipment on their own farms at relatively low cost. On the other hand it may be cheaper to hire custom work than to own and operate the equipment.

There are many ways in which farmers are effectively spreading the use of high cost equipment over more than one farm. Custom work is one such method. Exchanging one machine for another is also common, as where one owns a combine, his neighbor owns a corn picker, and they

work together in harvesting crops on both farms. Or, a farmer may exchange his labor for the use of machines. Recently a young farmer in a near-by community told one of our farm management classes that he is getting along very well owning just enough machinery to "work the ground." In his community there are a number of farmers who do not have regular hired help, yet frequently need an extra worker during harvest seasons even though they own the necessary harvesting equipment. By working with these neighbors this young farmer has obtained the use of such machines as a hay baler, combine, and corn picker. He has not experienced any losses in his own crop through delays in getting it harvested. Although all communities do not offer equal opportunities for such arrangements, the possibilities are worth looking into by the farmer with limited capital. Owning equipment in partnership is a less common method of spreading its use over two or more farms, and is usually found in cases where the farmers are related.

Buying the right equipment. The practical problem of the farmer is in terms of such questions as the following:

Should I buy a combine? Will it pay?

What size of combine should I buy?

What size of tractor should I buy?

Should I buy a second tractor? Is it a necessity or would it be only a convenience?

Unfortunately, in many if not most cases, there are no ready answers to such questions. They must be answered by each farmer in light of his situation. Investment in a tractor or piece of equipment should bring in additional farm income. For most farmers such investment must also be balanced against benefits from a like investment in livestock, buildings, fertilizer, drainage or conservation work. For example, draining a field may increase the time available for working the soil and decrease the need for a second or a larger tractor, and it may increase crop yields.

There are a number of questions that should be asked to help decide whether the purchase of a particular machine would be a profitable investment. The following is not a complete list, but it is suggestive of the type of questions that should be asked.

1. Is the manpower available on the farm to operate the machine? This question is particularly important in connection with the purchase of a second tractor.

2. Is your tractor suitable to use with the machine?

3. Compared to your neighbors are you usually late in completing your work?

4. If you hire custom operators do you have trouble getting your crops harvested on time and in getting a good job done?

5. Will it cost less to own and operate the machine than to hire a custom operator? This is not a simple question but you can approximate an answer. If it is a harvesting machine estimate its annual cost at 15 percent of its original cost and add the additional cost of operating your tractor to pull it. Compare this total with the cost of hiring a custom operator to harvest your crop.

6. Will the machine increase your income, by enabling you to farm more land that is available in the community and for which you have the labor to operate, by making it possible for you to care for more livestock, by increasing crop yields, or by making it possible for you to do custom work that is available in the community and which you have time to do?

If the answers to these questions are in the affirmative it is likely that purchase of the tractor or machine will be a profitable investment. If the answers are in the negative the purchase may be an expensive convenience.

Operating efficiently. In addition to having the right equipment it is of course necessary to operate it efficiently if costs are to be kept low. This is mainly an engineering problem. It involves keeping machines in good operating condition and properly adjusted, proper carburetor adjustment and proper loading of the tractor, and preventing excessive depreciation by timely repairs and by protection from rust.

J. E. WILLS

GETTING STARTED IN FARMING WITH LIMITED CAPITAL¹

An able-bodied man with empty hands can take a job of unskilled labor and earn a living, however a rather meagre living. His output, or production, and his earning capacity will increase as he acquires tools and the skill to use them. That is the problem of a young man getting started in farming, the problem of acquiring the capital and the skill to use it that will make his efforts more productive.

Even a good farm hand must have more than the requirements of an unskilled laborer. He must be able to exercise considerable skill in the operation of modern power machinery and farm tools. He must possess considerable knowledge of the care and feeding of livestock. Beyond that, to be a top-notch man, he must possess the ability to exercise judgment and be willing to complete the tasks required efficiently, effectively and timely.

To gain the status of a self-employed, independent farm operator requires all the characteristics found in a good farm hand plus a few others, *together with* the ownership or possession of sufficient capital or

¹ Adapted from a talk given during Farm and Home Week, University of Illinois, February 8, 1950.

property to constitute a farm business. Theoretically the amount of capital or property thus required could range from a very little to an investment of substantial proportions, with, of course, the income from such businesses varying likewise.

Industry has advertised in recent years that it requires a capital investment of approximately \$8,000 to give employment to one man. According to figures from the Bureau of Agricultural Economics agriculture is on a par with industry.¹ If, however, you are thinking of farming at the level of our account-keeping farmers in northern Illinois you will find the average capital invested per man to be much greater than that.

If you will look at Table 1 you will see that the investment in real estate (land, buildings, and land improvements) per man ranged from almost \$16,000 on the small dairy farms to almost \$34,000 on the larger grain farms. Remember that these values represent 1947 prices. The average inventories (beginning and end of 1947) of livestock, feed, grain, machinery and equipment amounted to more than \$8,000 per man.

At any rate the problem is how can a young man acquire control or possession of land and capital valued upwards of \$25,000? Fortunately, through the institution of tenancy, it is possible to rent farms completely equipped with buildings, fences, improvements, and a residence for the operator. Likewise there are agencies such as commercial banks, production credit associations, loan companies, and individuals with enough money to lend to finance a lot of young farmers. It really is not so much of a problem after all — or is it?

It sounds simple until you try to find a farm to rent or a credit agency that will actually make you a loan. Then it seems there are a lot of reasons why they cannot do business with you. Some of these reasons involve the ownership of property, or rather, the lack of property. Others involve the personal fitness of the young man in question.

A landlord wants a tenant for his farm who has demonstrated his ability to farm well and to produce high yields. He wants a man with enough machinery, equipment and resources to farm his ground properly, to harvest the crops in timely fashion, and to put in sufficient time to keep up improvements and control weeds.

A lender wants as a borrower a man who has title to enough property to serve as collateral to guarantee the safety of the loan. He wants a borrower who is experienced in the productive use of capital and who has demonstrated his ability and willingness to repay his indebtedness.

At this point I should like to address myself particularly to the young men who are or will be faced with this problem of getting started in farming. Many of you will have dads or fathers-in-law or other kinfolks

¹ United States Department of Agriculture, Miscellaneous Publication No. 707.

who will be both willing and able to be your landlord or banker or both. If you are in this position you will be considered, and perhaps you are, fortunate. But let me remind you that being a successful farmer, and even getting a successful start will still require a lot of honest effort on your part.

In a questionnaire we are currently using as part of a study in farm management we are posing this question as applied to a farmer that was previously selected. "Not all people have the same chance to make good, through no fault of their own. How did this man's opportunity to be a successful farmer compare with other farmers in the county? Did he have a better chance? The same chance? A poorer chance?" If the answer given was either a better or a poorer chance our respondents (nearly all farmers and neighbors of the men selected) were asked to briefly state the reasons for their answer.

Out of a hundred farmers, 21 were deemed to have had a better chance because either they or their wives inherited or were given land or money, or in some way received substantial financial help. Seven were deemed to have had a better chance because of a better education, and better home training with farming skills and practices learned from fathers who were progressive farmers. Three were deemed to have had a better chance for other reasons.

The important thing about these figures, as I see it, is not that approximately one-fifth had their problem solved, but that of that one-fifth only ten, or just under one-half, were rated as having farms that are being operated with better than average management. On the other hand nearly 70 percent of those who received the better training and education were rated as having farms operated with better than average management.

To complete the summary of our questionnaire, 50 out of 100 farmers were deemed to have had an average chance or the same chance to be successful as other farmers in the county. Nineteen were deemed to have had a poorer chance, with poor land, poor parents, starting from scratch or starting in debt, and no financial help as the reasons given in nine of the 19 cases. Three others were similar in that the father died before being able to help his son get started. Six of the 19 were handicapped by a lack of education or proper training at home. One was handicapped by poor health and other reasons.

Again the real story lies in the apparent results achieved by these farmers. Seventy-one percent of those who were handicapped by a poor financial start apparently overcame their difficulties to the extent that they were rated as having farms operated with average or better-than-average management. The deficiency in training and education, however, was a

TABLE 1.—AVERAGE INVESTMENTS AND CASH EXPENDITURES ON FARM BUREAU
FARM MANAGEMENT SERVICE FARMS IN NORTHERN ILLINOIS

Figures are given per farm and per man (12 months labor used) by size and type of farm in 1947

	GRAIN FARMS				HOG FARMS			
	Under 180 acres		180-259 acres		Under 180 acres		180-259 acres	
	Per farm	Per man	Per farm	Per man	Per farm	Per man	Per farm	Per man
Average size of farms—acres.....	152	125	223	150	147	103	218	128
Average number of tillable acres.....	140	115	205	138	130	91	186	109
Average investment in:								
Livestock, feed, grain and seeds ^a	\$ 8,139	\$ 6,690	\$11,237	\$ 7,576	\$11,117	\$ 7,801	\$15,546	\$ 9,145
Machinery and equipment ^b	2,681	2,204	3,380	2,279	2,799	1,964	3,493	2,055
Total operating capital.....	\$10,820	\$ 8,894	\$14,617	\$ 9,855	\$13,916	\$ 9,765	\$19,039	\$11,200
Buildings and land improvements ^b	\$ 6,305	\$ 5,182	\$ 6,991	\$ 4,713	\$ 5,981	\$ 4,197	\$ 7,869	\$ 4,629
Land (1947 values).....	29,333	24,109	43,381	29,246	25,687	18,026	35,895	21,115
Total real estate ^c	\$35,638	\$29,291	\$50,372	\$33,959	\$31,668	\$22,223	\$43,764	\$25,744
Cash expenditures for:								
Purchase of livestock, feed and crop expense.....	\$ 2,353	\$ 1,934	\$ 3,228	\$ 2,176	\$ 5,833	\$ 4,093	\$ 7,572	\$ 4,454
Fuel, repairs and operating costs.....	2,625	2,158	3,595	2,424	3,097	2,173	4,585	2,901
New capital items.....	2,413	1,983	2,613	1,762	2,334	1,638	2,779	1,635
Total cash expenditures.....	\$ 7,391	\$6,075	\$ 9,436	\$ 6,362	\$11,264	\$ 7,904	\$14,746	\$ 8,674
Total months of labor used.....	14.6	12.0	17.8	12.0	17.1	12.0	20.4	12.0
Total labor and management earnings.....	\$ 8,728	\$ 7,174	\$12,927	\$ 8,715	\$10,406	\$ 7,302	\$13,876	\$ 8,162
DAIRY FARMS								
	Under 180 acres		180-259 acres		Under 180 acres		180-259 acres	
	Per farm	Per man	Per farm	Per man	Per farm	Per man	Per farm	Per man
Average size of farms—acres.....	136	83	215	106	145	109	220	128
Average number of tillable acres.....	113	69	168	83	123	93	186	108
Average investment in:								
Livestock, feed, grain and seeds ^a	\$16,747	\$10,201	\$12,769	\$ 6,280	\$17,514	\$13,218	\$22,404	\$13,051
Machinery and equipment ^b	2,670	1,626	3,842	1,890	3,055	2,306	4,380	2,551
Total operating capital.....	\$19,417	\$11,827	\$16,611	\$ 8,170	\$20,569	\$15,524	\$26,784	\$15,602
Buildings and land improvements ^b	\$ 6,456	\$ 3,933	\$ 9,084	\$ 4,468	\$ 6,386	\$ 4,820	\$ 9,309	\$ 5,423
Land (1947 values).....	19,777	12,047	28,688	14,109	17,883	14,109	34,240	19,946
Total real estate ^c	\$26,233	\$15,980	\$37,772	\$18,577	\$30,081	\$22,703	\$43,549	\$25,359
Cash expenditures for:								
Purchase of livestock, feed and crop expense.....	\$ 2,796	\$ 1,703	\$ 4,176	\$ 2,054	\$14,639	\$11,048	\$29,689	\$17,295
Fuel, repairs and operating costs.....	3,393	2,067	5,312	2,612	3,327	2,511	4,901	2,901
New capital items.....	1,784	1,087	2,479	1,219	1,968	1,485	3,685	2,147
Total cash expenditures.....	\$ 7,973	\$ 4,857	\$11,967	\$ 5,885	\$19,934	\$15,044	\$38,354	\$22,343
Total months of labor used.....	19.7	12.0	23.4	12.0	15.9	12.0	20.6	12.0
Total labor and management earnings.....	\$ 6,764	\$ 4,120	\$10,109	\$ 4,972	\$10,617	\$ 8,013	\$15,704	\$ 9,148

^a Market values on the farms. ^b Remaining cost values. ^c Residence not included on owned farms.

different matter. Only 44 percent of these were rated as having farms operated with average or better-than-average management.

What does all this mean to you? To young people who are contemplating careers as active farmers I think it should mean this. You owe it to yourselves to train and educate yourselves in every way possible for the job that is ahead of you. You may be surprised that I place this responsibility upon *you* rather than upon your fathers and mothers. What I have in mind is that *you* should take an active part in getting this training: *you* should show some initiative, some curiosity in learning why certain practices are being followed on the home farm.

While it is essential for you to learn the best farm practices and to acquire the skills necessary to modern farming these alone would hardly satisfy a prospective lender or a potential landlord. On the personal side is the question, can you combine these skills and this knowledge with the ability to organize and direct a balanced farm business?

Why did your father buy those beef cattle instead of that cub tractor you wanted? Why doesn't he rent that 80 acres three miles down the road? Why do you have your neighbor combine your beans instead of owning a combine yourself? How much should you pay for a purebred sire for your herd? Should you paint the buildings, put a hog tight fence on the south field, or tile that low spot? What is a fair cash rent for hay and pastureland where the landlord provides good fences and shelter for livestock? How much is this farm worth? Is this a good time to buy?

These questions are typical of a lot of questions which you as a farm operator may be expected to answer; and the soundness of your judgment in these matters may determine your success as a farmer or your ability to repay borrowed money.

You will have very few opportunities for any "practice shots" on such matters as these, so I would suggest that you acquaint yourself thoroughly with reasons for *and* against such decisions when they occur on the home farm.

As to the physical realities of getting started in farming, I find no satisfactory substitute for good old-fashioned thrift. The younger you are when you start on your saving the more time you will have to acquire a suitable amount of capital that can serve as a basis for borrowing that which you do not already own.

Remember that it may be much wiser to borrow needed capital in order to reach a satisfactory volume of business than to accept low returns from your labor when you do not have sufficient capital to make it productive.

Your savings may take the form of a bank account, or perhaps, if the opportunity is yours, you may invest your savings in the growth and

expansion of a livestock enterprise started as a 4-H club project; or you may make a down payment on farm machinery which you can amortize with income from custom work. Whatever form your savings may take, you will be one step ahead if your investment is such that it will contribute directly to getting started in farming, or indirectly in providing some useful experience.

This raises the question of how your limited capital should be invested when you actually make a start at farming. We could spend hours on this question alone, but I shall make just a few suggestions.

1. Stick to essential items in machinery and equipment. Do not become "gadget happy." Your creditors will also be better impressed if your personal car is of a make and model consistent with your current financial position.

2. Share the cost of large pieces of machinery with a neighbor or relative with whom you can exchange work. This can be done by joint ownership of hay balers, combines, corn pickers, etc., or by each man owning one of the machines and exchanging the use of them in an agreed upon fashion.

3. It may be best to depend upon hiring certain machine work the first year or two, and invest the extra capital in productive livestock. Combining, trucking, hay baling, silo filling and feed grinding are among the jobs that can be hired done in most communities.

4. How much livestock and what kind? This is partly a problem of capital turnover. The longer you postpone income from these sources the more you will need to borrow or set aside for operating purposes such as tractor fuel, repairs, protein feed, seeds, hired man's wages, etc. See Table 1 for an idea of the cash expenditures for 1947 on farms of different types and sizes.

Milking dairy cows or heifers and laying hens or pullets will give almost an immediate return, but your capital input will be proportionately greater than if you bought baby chicks or calves. Bred gilts should bring a return within a year, and are an excellent livestock enterprise for a young farmer because they can be handled with a minimum of buildings, equipment and fences on rented farms where these items may limit or prohibit other classes of livestock. Feeder cattle entail too great a risk and too high an investment for a young farmer with limited capital and little experience.

The amount of livestock to start with will depend upon how much money you have to invest (including an allowance for special equipment, feed expenses and other costs) and your skill and previous experience with livestock, together with the need for building up a volume of business on a limited acreage.

Probably the best and most natural way for a farm boy to get started in farming is the one I have said least about, and that is through a business arrangement with his father. I am not going to discuss such a business arrangement but there are just a few comments I do wish to make.

1. A father-son business agreement need not be any more complicated than you wish to make it, and it can be most anything you wish to make it. Know what you want.

2. Put it in writing. Remember it is a business agreement.

3. Keep complete and accurate records of the total farm business.

4. Provide for a large enough business to yield a satisfactory income for both parties.

5. Each party should understand his position, and I would particularly caution the son about his. Dad may intentionally make the agreement favorable to you as the son; he may offer a guaranteed wage as a measure of security for you. But I would have you remember that risk bearing is an essential ingredient of the spirit of enterprise, and security is a luxury that can be too high priced for a young man to afford. I have had several fathers tell me that their agreements did not prove satisfactory because the sons were discouraged by temporary reverses and were reluctant to exercise any initiative or make a contribution of their own to the management of the business. Of course, you dads should remember that your judgment was developed through trial and error too, and probably not without considerable error at times.

In summary I would re-emphasize just three points of critical importance to a young man expecting to farm. They are:

1. Develop habits of thrift early in life and save toward your objective.

2. Prepare yourself to assume the role of businessman and farmer by gaining all the experience, knowledge, and skills you can *before* you step out on your own.

3. Measure your resources, calculate the risk, develop a workable plan, and GET STARTED!

F. J. REISS

Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. ⁹ Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. ¹⁰ Federal Reserve Bulletin of Federal Reserve Board. ¹¹ Preliminary estimate. ¹² Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹³ Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.



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TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-	
1934.....	93	86	76	96	79	68	71	80	68	75
1935.....	99	104	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	306	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	247	275	207	383	392	189	303	351	192
1949.....	192	218	218	200	343	346	176	308	325	176
1949 Feb....	196	221	219	201	266	247	151	307	340	189
Mar.....	196	226	226	204	293	346	170	306	333	184
Apr.....	195	224	224	203	275	321	158	308	319	179
May.....	193	225	220	202	288	309	153	308	313	174
June.....	192	222	221	201	306	328	163	306	316	169
July.....	190	219	217	200	326	366	183	306	313	162
Aug.....	190	214	218	199	363	293	147	308	323	170
Sept.....	191	215	224	198	392	287	145	309	335	174
Oct.....	189	210	213	196	471	608	310	306	321	166
Nov.....	188	206	207	196	457	393	200	308	314	173
Dec.....	188	204	202	196	349	325	166	313	330	180
1950 Jan....	188	204	201	199	337	379	190	319	330	183
Feb.....	189	209	209	198	239 ¹¹	307	155	326	...	180

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			Apr. 1949	Current months, 1950		
	1935-39	1948	1949		February	March	April
Corn, bu.....	\$.66	\$1.89	\$1.17	\$1.22	\$1.18	\$1.20	\$1.27
Oats, bu.....	.31	.94	.63	.68	.69	.71	.75
Wheat, bu.....	.86	2.23	1.94	2.10	1.97	2.05	2.11
Barley, bu.....	.62	1.58	1.07	1.15	1.06	1.11	1.11
Soybeans, bu.....	.90	3.20	2.19	2.08	2.15	2.29	2.52
Hogs, cwt.....	8.52	23.71	18.62	18.70	17.00	16.10	15.66
Beef cattle, cwt.....	7.88	24.77	21.57	21.60	21.20	21.70	22.55
Lambs, cwt.....	8.36	23.44	23.36	27.00	24.00	24.20	24.55
Milk cows, head.....	58.00	194.17	198.33	200.00	205.00	205.00	210.00
Veal calves, cwt.....	8.66	26.29	25.63	28.00	27.00	25.70	25.70
Sheep, cwt.....	3.58	8.93	8.70	10.20	10.00	10.80	11.00
Butterfat, lb.....	.27	.73	.58	.57	.60	.59	.55
Milk, cwt.....	1.68	4.48	3.48	3.25	3.50	3.45	3.30
Eggs, doz.....	.19	.42	.40	.39	.26	.28	.27
Chickens, lb.....	.15	.30	.27	.33	.23	.25	.24
Wool, lb.....	.25	.42	.42	.41	.42	.42	.44
Apples, bu.....	1.08	2.33	2.38	3.50	2.00	2.05	2.17
Hay, ton ¹³	9.39	20.64	22.68	20.50	21.90	20.80	21.24

¹³ For sources of data in tables see preceding page.

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Articles in This Issue

Management Problems in Legume-Grass Production — J. E. WILLS...	PAGE 985
Classes of Hogs as a Factor in Analyzing Market Information — W. J. WILLS.....	989
Opportunities in Beef Cattle on Small Farms in Southern Illinois — W. R. BAILEY, J. E. WILLS, and A. J. CROSS.....	993
Federal Wage-Hour Law — N. G. P. KRAUSZ.....	1000

MANAGEMENT PROBLEMS IN LEGUME-GRASS PRODUCTION¹

The general theme, "Legumes and grasses pay off," is a popular slogan. There are two general ways in which legumes and grasses pay off; first, by improving fertility and productivity of the soil, and second, by providing better feed for livestock. With this general theme we certainly agree. In discussing management problems in legume-grass production — probably it would be better to say "in legume-grass production and utilization" — our purpose, therefore, is not to raise questions or cast doubts as to whether legumes and grasses do pay off. Rather, it is to point out certain management problems directly or indirectly related to legumes and grasses, with the idea that recognition and discussion of these problems may aid in their solution and in making legumes and grasses pay off to the greatest advantage to the individual farmer.

Our first point is that management problems related to legumes and grasses are not the same in all areas, or on different farms in the same area. They are not the same in a livestock area and in a grain area, or on a livestock farm and on a grain farm in the same area. On a livestock farm the increase or improvement of legumes and grass production help solve one of the farm's most important problems, that of providing a good supply of feed. On a grain farm an increase in legume-grass production may actually create or intensify some management problems while solving other problems. In this comment there is no intention to imply

¹ Farm and Home Week Talk, University of Illinois, February 6, 1950.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

that all farms should be livestock farms: such an assumption would be neither sound nor realistic.

Management problems related to legumes and grasses are obviously different in an area of steeply rolling land, with a serious erosion hazard, than in an area of level land with a minor erosion hazard. They are obviously different on an owner-operated farm than on a rented farm with the common types of leasing arrangements. In some respects they are different on a small farm and a large farm. With these differences one can easily go too far in generalizing as to what the management problems are, or as to how they can best be solved. Perhaps this point will be clear if we briefly sketch the steps of a legume-grass improvement program under widely different conditions.

First, let us look at an area of rolling land in which typical farms have 75 or 80 percent, or even up to 100 percent, of their land suited to pasture and hay and unsuited to grain production. Southern Illinois, in the vicinity of Dixon Springs, is a good example of such an area. On these farms the steps in a legume-grass system of farming are quite evident and clear-cut. These steps can be included under six headings.

1. First, clearing off brush and control of gullying are necessary on much of the land to be maintained in pasture or hay. These are jobs that require a good deal of work and sometimes, but not always, a considerable outlay of cash.

2. Second, limestone and phosphate must be applied so that legumes and grasses can be successfully grown. This is the part of the program requiring the greatest outlay of capital.

3. Third is the seeding of high-producing legumes or legume-grass mixtures selected to provide a long grazing season. Much of the land will be in long rotations or in permanent meadow or pasture, broken up only as necessary for reseeding.

These three steps deal with the production of legumes and grasses.

4. To a very large extent on these farms, legumes and grasses put money in the bank only through sales of livestock and livestock products. So a fourth step is stocking the farm with cattle or sheep to utilize the forage produced, and to make effective use of the labor available on the farm.

5. Fifth is managing the livestock program efficiently and in a way to obtain high returns from forage, the farm's principal crop.

6. A sixth step is a combination of production and utilization. This is pasture management, including weed control and rotated or regulated grazing.

From the standpoint of over-all management the problem on these rolling farms is (1) to increase the yield, production, and quality of forage in order to provide more and better feed for more livestock, and (2) to develop a livestock program to make efficient use of the forage.

In an area of level fertile land the place of legumes and grasses is not so clear-cut. Farmers in such an area have alternative opportunities

not available to those in the rolling area. Most or all of their land is suited to grain production, and legumes and grasses are for the most part grown in rotations with grains. Here the basic problems are (1) to treat the land with limestone, phosphate, and potash as needed, and (2) to establish a crop rotation with legumes and cultural practices that will maintain grain production at a high level. This indicates the most important factor determining the minimum legume acreage needed on a level fertile farm. How far the farmer goes in utilizing the necessary legumes (or his grain crops) through livestock, or how far he goes beyond this point with more legumes and grasses and a larger livestock business, are important management questions. But they are questions that can be correctly answered in different ways, in fact they must be answered in different ways, under different price conditions and by different farmers. The answers are not determined by the needs of the soil.

We have said that the place of legumes and grasses in successful farming systems may be quite different under different situations. Two rather extreme cases have been considered. In one, the grassland farm with little or no land suited to grain production, the farmer must go all the way down a well defined road. He has to get high forage production and utilize the forage in efficient livestock production. In the other case, of level land well suited to grain production, the road is clearly defined in its early stages, but later on it comes to a "fork," or to several "forks." The part that is clearly defined is that the land must be treated to correct acidity and mineral deficiencies, and crop rotations must include enough legumes to maintain a high level of grain production. The forks of the road come beyond this point, where some farmers may go one way with a grain farming system and others may go another way with livestock programs of variable extent. We should, of course, carry this analogy a bit further. A great many Illinois farmers have not yet come to the first fork of the road in a legume-grass program, and perhaps some are hardly on the road at all.

A number of other important aspects of our subject should be pointed out. One question of general interest would go something like this, "How will more emphasis on legumes and grasses affect the costs of farming?" First there are capital needs, where a sizable outlay is required at one time, with returns spread over a number of years. Land treatment — limestone, phosphate, and potash — is most often the largest capital need of a legume-grass program. This need varies, but may run up to \$20 to \$25 per acre. Capital may be needed for livestock or for buildings. These needs vary a great deal depending on the kind and size of the livestock business. Investments in tractors and machinery are not likely to be materially affected by more legumes and grasses, although some farmers

are making rather heavy investments in such things as field choppers, balers, barn driers, and silos. We can summarize by saying that new or additional investments will usually be required to establish and operate farm production plans involving more legumes and grasses.

How about operating costs? As broad generalizations we may state the following:

1. Systems of farming with more legumes and grasses will increase cash expenses on some farms but will decrease cash expenses on other farms. Where feeder cattle are purchased to utilize forage a good deal of cash or short-term credit is needed, and risks are increased.

2. On the whole, farmers will put in more days of work in carrying out systems of farming with more legumes and grasses, but the labor will be more evenly distributed through the year.

3. Annual costs for power and machinery will not be materially changed with more legumes and grasses.

"Legumes and grasses pay off" means that legumes and grasses increase net incomes. The only question is the timing of the pay off. In some cases improvement in the legume-grass program increases net returns almost immediately. Examples of quick returns would be where a good legume catch crop increases corn yields without decreasing corn acreage, or where a better pasture increases milk production on a dairy farm. In other cases such a program pays off only over a period of years, and actually reduces net (cash) incomes temporarily. This is particularly true where more legumes and grasses involve large capital outlays, building up livestock breeding herds, or major shifts in acreages of grain crops.

In general a shift to more legumes and grasses in the corn belt would temporarily reduce the quantities of corn and soybeans sold, but it would not decrease, and might even increase, the quantity of small grains for sale. In time, however, more corn than is now marketed could be sold under the high legume system, but less soybeans would probably continue to be sold. This is not a prediction of what will actually happen in the future. It is only a statement as to probable trends that would accompany a shift to more legumes and grasses, ignoring the influence of price support and production control programs. Such programs obviously cannot be ignored.

Finally, systems of farming with more legumes and grasses afford a greater opportunity for the individual farmer to reap full rewards from his management and skill as a farmer. It is fair to say that the average Illinois farmer is not as skilled in getting high returns from legumes and grasses as he is in some other things, such as growing corn or soybeans, fattening hogs, or operating complex machinery. As one example, good pasture management practices are not a common part of general knowledge, or of general practice, even on livestock farms where pasture may

be the most important crop. More and better legume-grass systems present not only a challenge but a real opportunity for a farmer to make the most of his management and skill. This is true, whether he is a grain farmer who can maintain an average corn yield of a hundred bushels per acre, or a livestock farmer who can maintain a high level of livestock efficiency and income.

J. E. WILLS

CLASSES OF HOGS AS A FACTOR IN ANALYZING MARKET INFORMATION

When talking to farmers this statement is heard frequently, "Hogs from 180-270 pounds all sell at the same price in September when my hogs are light, but by December there is a wide price differential in favor of light hogs — why does this price spread change?" The percent of hogs received at markets in the various weight groups* provide an explanation for changing price relationships.

Two types of relationships in the live hog market are important: (1) percent of total hogs represented by sows, and (2) percent of barrows and gilts in each weight group. Such a breakdown of hog receipts is referred to as "consist of the hog market."

Figure 1 shows the percent of sows on the Chicago market by weeks

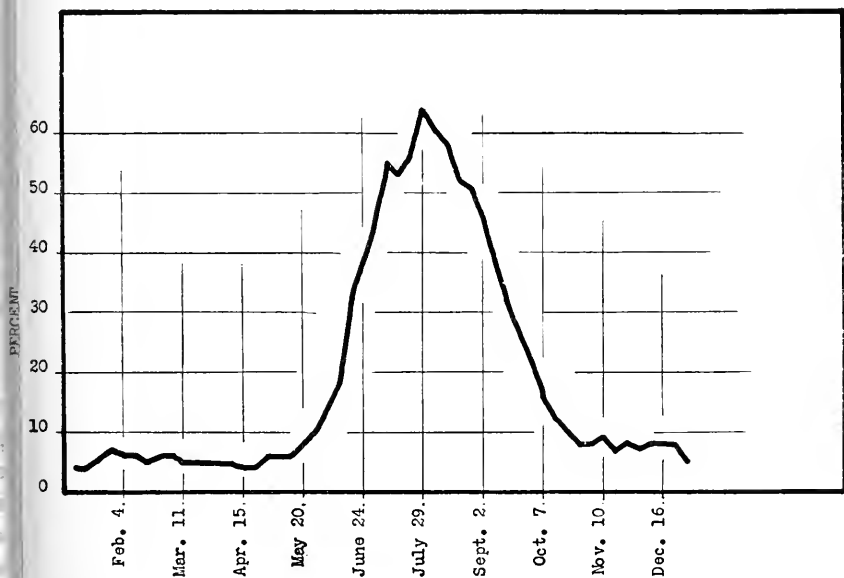


FIG. 1. — PERCENT OF CHICAGO HOG RUN REPRESENTED BY SOWS, BY WEEKS, 1949

for 1949. Sows and heavy butcher hogs tend to compete for certain pork outlets and when sows are plentiful price spreads between, say, 220-240 pound hogs and 270 pound and over hogs may be greater than when there are fewer sows.

The other important factor in the consist is the weight of the barrows and gilts. One measure of this is the average weight of all barrows and gilts; the other is the percent sold in the various weight groups. This latter measure is more effective in presenting a picture of the market.

Figure 2 shows the percent of hogs marketed at Chicago in 1949 at various weights as well as the average weight of all hogs.

Figure 2a shows that over 270 pound hogs come to market in the largest relative numbers the first three months and in smallest numbers in late summer and early fall. Light hogs under 220 pounds are relatively most important in the fall. The percentages in the various weight groups explain the average weights shown in the lower part of Figure 2.

By breaking down the receipts by weight groups one can better understand why prices behave as they do. A person often hears such statements as: "Packers do not differentiate enough in price between heavy hogs and light hogs. We all know heavy hogs produce more lard and are worth less."

How does consist of the market help to explain price relationship? Price relationships between the various weight groups change from week to week. At one time there may be a large differential between heavy and light hogs and at another time little, if any, differential.

By referring to Figure 2 one can see that at certain times of the year there are relatively more light hogs than at other times of the year, and a comparison of price relationships indicates that the different weight hogs may not be complete substitutes for each other.

In the early part of the marketing year large runs of heavy hogs and small runs under 220 pounds caused a substantial differential between prices of light and heavy hogs. In May there were relatively more light hogs so that hogs under 240 pounds were all selling for about the same

TABLE 1. — SOME REPRESENTATIVE PRICE RELATIONSHIPS FOR VARIOUS WEIGHT GROUP HOGS IN 1949 AT CHICAGO

Week ending	200-220		220-240		270-300	
	Price	Percent receipts	Price	Percent receipts	Price	Percent receipts
January 7	\$21.52	11	\$20.85	17	\$19.12	17
May 20	19.36	14	19.30	27	18.76	14
August 6	22.95	28	22.88	27	21.80	8
October 27	17.91	36	17.94	36	17.94	3
December 30	16.12	14	15.71	27	14.68	12

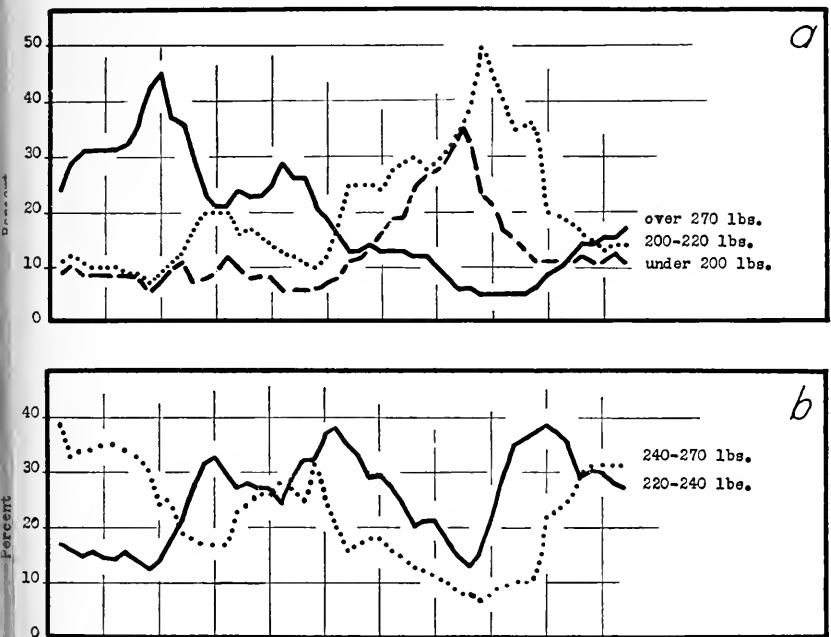


FIG. 2a, 2b. — PERCENT OF HOG RUN REPRESENTED BY SPECIFIED WEIGHT GROUPS, BY WEEKS, CHICAGO, 1949

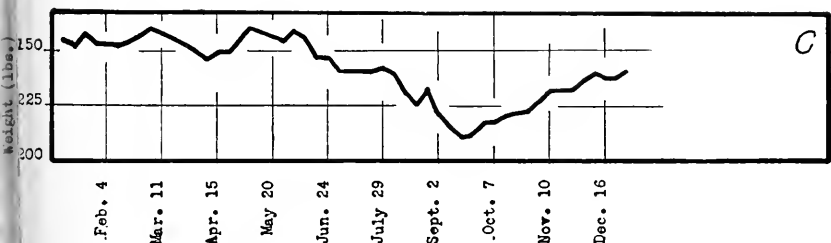


FIG. 2c. — AVERAGE WEIGHT OF BARROWS AND GILTS SOLD AT CHICAGO, BY WEEKS, 1949

price. In October, with very few heavy hogs, light hogs were selling at a discount. To understand price relationships, information on the consist of the run is helpful.

Why do these price differentials vary? The most logical explanation is that some customers prefer certain weight cuts of meat and will buy these cuts without too much price consideration. After this demand is

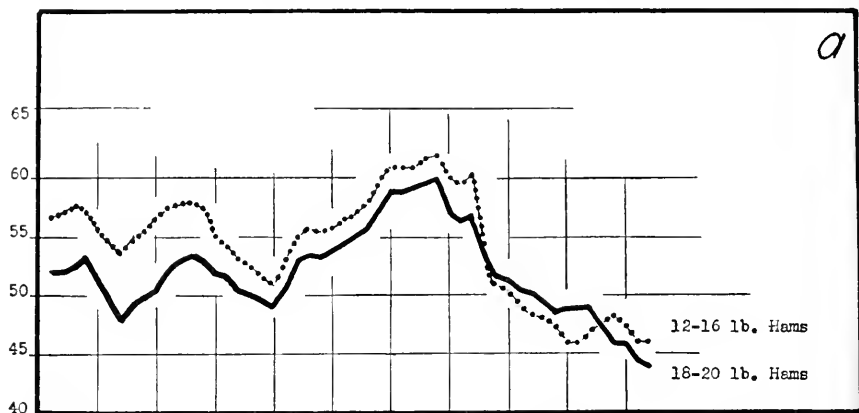


FIG. 3a.— WEEKLY WHOLESALE PRICES OF HEAVY AND LIGHT HAMS, CHICAGO, 1949

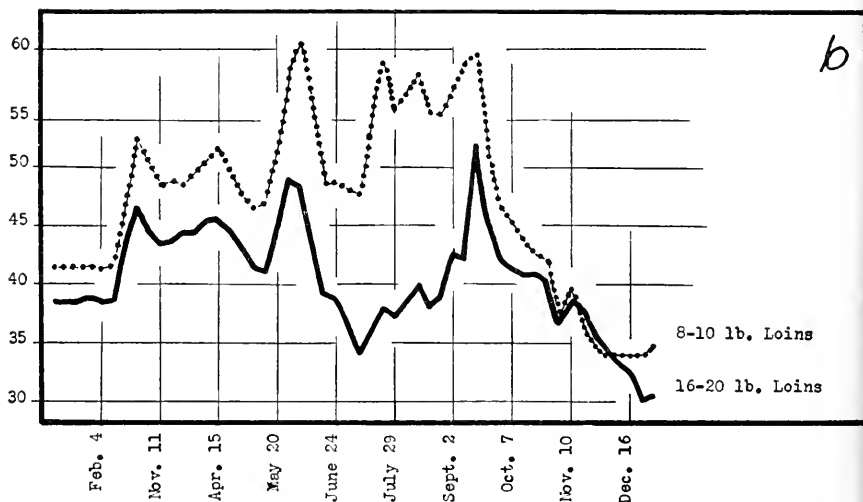


FIG. 3b.— WEEKLY WHOLESALE PRICES OF HEAVY AND LIGHT LOINS, CHICAGO, 1949

satisfied additional supplies can be sold only at a price discount. Figure 3 compares the price of hams and loins from light and heavy hogs for 1949.

In comparing Figures 2 and 3 during the months when there are relatively more heavy hogs the price differential between the wholesale cuts from light and heavy hogs is more in favor of light hogs. Then as light hogs increase in relative numbers the price differential decreases and for a short time in 1949 the differential was in favor of the cuts from heavy

TABLE 2.—SOME REPRESENTATIVE PRICE (CENTS PER POUND) RELATIONSHIPS FOR VARIOUS WEIGHT WHOLESALE CUTS OF PORK IN 1949 AT CHICAGO

Week ending	Ham		Loin	
	12-16 lbs.	18-20 lbs.	8-10 lbs.	16-20 lbs.
January 7.....	56.8	52.0	41.7	38.7
May 20.....	51.0	49.0	51.9	44.9
August 6.....	61.0	59.0	56.4	38.7
October 27.....	48.0	49.2	42.0	40.5
December 30.....	46.0	44.0	34.8	30.6

hogs. This helps explain why price differentials between various weight hogs change from week to week.

This same relationship is brought out in Table 2.

Conclusions. For a better interpretation of market information the farmer needs to know the consist of the run—the percentage of hogs that are sows and the percentage of barrows and gilts in the various weight groups. Such a market picture would help explain why at one time prices of one weight group are relatively high and at other times prices of another weight group are relatively high.

Hog market information is more readily understood when the prices of pork products are considered.

W. J. WILLS

OPPORTUNITIES IN BEEF CATTLE ON SMALL FARMS IN SOUTHERN ILLINOIS

This is the third in a series of articles on opportunities on rolling farms in the upland area of southern Illinois.¹ These articles have been taken from a more inclusive study conducted cooperatively by the Bureau of Agricultural Economics, United States Department of Agriculture, and the Department of Agricultural Economics, University of Illinois.²

Most of the land in the upland area of southern Illinois is suited to hay and pasture rather than to intensive crops. The rolling farms are typically small. To obtain a satisfactory income the operator of a rolling farm must:

- (1) Improve the land, thereby increasing the yields of adaptable crops.
- (2) Raise dairy or beef cattle, or sheep to consume the forage crops produced.

¹ Alexander, Hardin, Jackson, Johnson, Massac, Pope, Pulaski, and Union are the counties in the upland area.

² The other articles are: Bailey, W. R., and Wills, J. E., "Opportunities in Poultry on Southern Illinois Farms," *Illinois Farm Economics*, Numbers 151 and 52; and Bailey, W. R., Wills, J. E., and Cross, A. J., "Opportunities in Dairying on Southern Illinois Farms," *Illinois Farm Economics* 170.

(3) Carrying on a farming program that will effectively utilize the available labor supply.

The topography, soil, and climate of southern Illinois are suited to production of beef cattle but most rolling farms are too small in acres to depend on beef cattle as a single or primary source of income except where the operator earns a sizable income by working off the farm or receives money from another off-farm source. The larger units, however, can carry them as part of a farming program that includes poultry, dairy, orchard, or other enterprises which require a large amount of labor in relation to land. Operators of the smaller units who receive no income from off the farm will usually find it impracticable to include a beef cattle enterprise in their farming programs.

This analysis of the situation and the opportunities is based on a survey of the beef cattle enterprises on ten selected farms in Johnson County and information from the Dixon Springs Experiment Station.

Farms surveyed. Information obtained from the survey indicates that the majority of the cattle are of mixed breeds but that the average cow has a high proportion of beef breeding. A sizable number of good-grade Herefords were found on the farms. Most of the farmers were breeding their cows to a good-grade or purebred beef bull.

Mixtures of Lespedeza and redtop or wild grasses were generally used for hay and pasture. Most of the meadows and pastures were unimproved; therefore, more acres per animal unit were required than would be necessary with an improved land-use program.

The number of breeding cows per farm ranged from seven to 44. (Table 1) The average was 19. An average of 17 calves were raised per farm with an average calf drop of 92 percent. Calves were born from February 1 to May 1 and weaned from September 12 to November 1.

TABLE 1. — AVERAGE PRODUCTION FACTORS, TEN BEEF CATTLE HERDS FROM OCTOBER 1, 1945 TO SEPTEMBER 30, 1946, JOHNSON COUNTY, ILLINOIS^a

	Average of 10 farms	Range	
		Low	High
Number of breeding cows.....	19.0	7.0	44.0
Number of calves raised.....	17.0	7.0	42.0
Percent of calf drop.....	92.0	85.0	100.0
Age of calves weaned (month).....	7.0	5.5	9.0
Feed per breeding cow and calf:			
Grain (pounds).....	557.0 ^b	0.0 ^c	1,250.0
Hay (tons).....	1.5	.....	2.5
Pasture (acres) ^d	3.7	.....	6.0
Beef produced per cow (pounds live weight).....	573.0	428.0	765.0
Date calves born.....	March 15	February 1	May 1
Date calves weaned.....	October 20	September 12	November 1

^a Enterprise survey.

^b Average for four farms that fed grain.

^c Six farms fed no grain.

^d Pasture days could not be ascertained from the survey data.

TABLE 2. — AVERAGE WEIGHT OF GRADE HEREFORD CALVES AT ROUNDUP TIME, BY MONTH OF BIRTH

Month of birth	Dixon Springs Experiment Station ^a		Survey farms ^b	
	Number of calves	Average weaning weight (pounds)	Number of calves	Average weaning weight (pounds)
February.....	6	525	48	525
March.....	126	401	50	443
April.....	91	345	21	381
May.....	31	349	4	350
June.....	23	294	..	...

^a Experiment station data. Roundup time was November 12.

^b Enterprise survey. Average roundup time was November 1.

They were from 5.5 to 9.0 months old when weaned. The average cow consumed 1.5 tons of hay, grazed on 3.7 acres of pasture, and produced a calf that weighed 573 pounds when weaned. Four of the farmers fed 557 pounds of grain per cow per year; the others fed no grain. The average weight of the calves, most of which were grade Hereford, on the farms surveyed and the grade Hereford calves of the same age at the Dixon Springs Experiment Station varied very little. (Table 2)

Profitable production practices. Prerequisite to any good livestock program is a land-use program that will carry a large number of animal units per acre and that will at the same time maintain or improve the fertility of the soil. Bushy fields that can be used only for hay or pasture should be cleared of brush and broom sedge and seeded to an adaptable legume and grass mixture. Applications of limestone and phosphate should be made on fields where soil tests indicate they are needed. Soil conserving rotations should be introduced on land that is adapted to small grain and row crops, and other soil conservation practices should be introduced where required.

A well-bred herd will pay for the effort necessary to develop it by producing animals of better quality and more pounds of live weight per cow. Farmers in the upland area can improve their herds by breeding to good-grade or purebred beef bulls. A heifer that is a cross between a dairy and beef breed should never be used to replace older cows in the herd.

Studies at the Dixon Springs Experiment Station indicate that beef cattle in this area do well on nongrain rations if they have adequate pasture and are fed mixed or legume hay of good quality during the winter. Approximately 320 pasture days and 1.5 tons of hay are required to properly maintain a cow and calf on a nongrain ration; about 60 pasture days, and three-fourths ton of hay are required for a heifer or steer calf, and about one ton of hay and 180 pasture days for a yearling heifer. Pasture production varies with the class of land; 2.1 to 3.2 acres of

TABLE 3. — STANDARDS FOR BEEF CATTLE WHEN NONGRAIN RATIONS ARE FED^a

Percent calf drop.....	90.0
Average age of calves weaned (month).....	8.0
Year's feed for cow and calf:	
Grain (pounds).....	0.0
Hay (tons).....	1.5
Pasture (acres).....	2.1-3.2
Pasture days.....	320.0 ^b
Beef produced per cow (pounds live weight).....	500.0
Date calves born.....	February 15
Date calves weaned.....	October 15

^a Based on enterprise survey and data from Dixon Springs Experiment Station.

^b Two-hundred and seventy pasture days for the cow and 50 for the calf.

improved mixed Lespedeza pasture are required to produce 320 pasture days per year. (Table 3)

The two most common systems used for production of beef are: (1) the cow and calf, in which the calves are sold soon after they are weaned; and (2) the grass-yearling system in which calves are wintered on dry feed, pastured the following summer, and sold in the fall.

Farmers who use the cow and calf system should plan to have their calves born in February or early March. Those using the grass-yearling system can plan to have them born as late as April or May if an earlier date is not desirable. Many upland farmers have found it practicable to compromise and sell those born early as grass calves and those born late as grass yearlings. In years when feed is sufficient and a rise in price is anticipated more calves should be carried over. When feed is scarce or a fall in price is expected more grass calves can be marketed in the fall.

When the cow and calf system is used the calf needs little attention if the cow is given proper care. Cows fed plenty of good legumes or legumes and grass hay are usually in good flesh when the calves are born; therefore, it is not necessary to include grain in their ration. On a few of the farms surveyed a small quantity of grain was fed from two weeks after calving until the cows were turned on pasture. The cows at Dixon Springs were fed some silage but no grain. A calf born in February should weigh from 450 to 500 pounds when it is weaned in October.

Herd cows used in the grass-yearling system require about the same care as those used in the cow and calf system but the calves need additional attention. Weaned calves should be kept vigorous and gaining without becoming too fat. A desirable gain is from 0.75 to 1.25 pounds daily throughout the winter. Calves at the Dixon Springs Experiment Station were fed approximately 4,000 pounds of silage, 140 pounds of oilmeal, and 200 to 300 pounds of mixed hay during the winter. When it is impracticable to provide silage, other feeds can be substituted without a significant change in results. Several upland farmers are getting good results by wintering calves on legume and grass hay and a daily ration

of one-half to three-fourths pound of oilmeal. Others are feeding a small quantity of grain. Weight increases on grain are likely to be greater than on nongrain rations but generally they are less economical. A concentrate ration commonly used is 3.5 pounds of chopped corn and 0.5 pounds of linseed oilmeal a day. Calves dropped in April or May should weigh from 300 to 350 pounds when they are weaned in October, and approximately 650 pounds when marketed the following fall.

Yearlings were not grain fattened on any of the farms surveyed and generally are not grain fattened on upland farms, but with a land-improvement program in effect some operators of the larger units which have considerable acreage adapted to corn may wish to fatten them. Grade Hereford steers that were fed in two trials at the Dixon Springs Experiment Station averaged 415 pounds when placed on feed in mid-November; were on feed 166 days, and averaged 797 pounds the following May. Thirty bushels of corn, 322 pounds of soybean oilmeal, 1,003 pounds of corn silage, and 270 pounds of hay were consumed by each steer.

Comparable results can be obtained by substituting legume or mixed hay for silage. The average return per head over feed and original steer cost was \$12.01.¹

Suggested adjustments for an upland farm. A clearer picture of the place of beef cattle on upland farms can be obtained by examining the program of a specific operating unit. Tables 4 and 5 summarize the current farming program on a typical 129-acre upland farm and a suggested program for the same farm after the land has been improved. Ninety acres of this farm are cleared land adapted to row crops, small grain, hay and pasture. According to capability classes 24 acres are adapted to a four-year rotation with one year of row crops, 44 acres to an extensive rotation which includes a small grain crop every fourth or fifth year, and the remainder to hay and pasture.

The present cropping system consists of seven acres of corn, 17 acres of mixed Lespedeza hay, and 66 acres of mixed Lespedeza pasture. Twenty-four bushels of corn and a little more than a ton of hay is produced per acre. Four milk cows; five beef cows; one brood sow, and 85 hens are used to produce livestock products and two horses are kept for power. The entire farming program requires 175 man-work units and yields a net return of \$605, with products valued at prewar prices. (Tables 4 and 5)

The suggested cropping program is consistent with use recommendations for land capability classes. Twenty-four acres would be in a rotation

¹ For details on steer feeding in southern Illinois see Webb, R. J., Lewis, J. M., and Francis, F. C., *Steer Management at the Dixon Springs Experiment Station*, Illinois Agricultural Experiment Station Publication, D.S. (rev.) 1948.

TABLE 4. — CURRENT AND SUGGESTED LAND-USE AND LIVESTOCK PROGRAMS WITH LABOR REQUIREMENTS FOR A TYPICAL FARM IN JOHNSON COUNTY, ILLINOIS

Land-use program	Unit of production	Current plan		Suggested plan	
		Acres	Production	Acres	Production ^a
Corn.....	bushels	7	168	6	240
Wheat.....	bushels	..	..	17	306
Hay, Lespedeza mixture.....	tons	17	21	..	..
Hay, alfalfa, timothy.....	tons	..	..	12	30
Pasture, Lespedeza mixture.....	a.u. days ^b	66	3,463	55	6,308
Meadow pasture.....	a.u. days ^b	(17)	502	(14)	700
Total.....		90 ^c		90 ^c	
LIVESTOCK PROGRAM		NUMBER		NUMBER	
Milk cows.....		4		4	
Beef cows.....		5		13	
Hogs raised.....		7		12	
Hens.....		85		200	
Work stock.....		2		2	
LABOR REQUIREMENTS ^d		MWU ^e		MWU ^e	
Total.....		175		224	
Increase.....		..		49	

^a University of Illinois, Department of Agronomy. Estimates based on experimental results at Dixon Springs Experiment Station and adapted to land classes in Johnson County.

^b a.u. = animal units.

^c There are 129 acres in the farm. Thirty-two acres is in woods and seven acres is in farmsteads, roads or lanes.

^d Adapted from labor requirements reported by experiment stations in Illinois, Kentucky, and Missouri.

^e MWU = man work units.

TABLE 5. — GROSS INCOME, CASH EXPENSES, AND NET RETURNS FOR A TYPICAL UPLAND FARM IN JOHNSON COUNTY, ILLINOIS

Item	Quantity unit	Current plan		Suggested plan	
		Quantity	Value	Quantity	Value
Gross income ^a					
Cull cows.....	number	2	\$100	3	\$180
Yearling heifers.....	..	..	..	1	50
Veal calves.....	number	1	15	2	30
Grass calves.....	number	5	200	9	405
Hogs.....	number	7	147	12	252
Cull hens.....	number	57	43	170	128
Chickens.....	number	100	50	225	112
Eggs.....	dozen	850	178	2,240	470
Butterfat.....	pounds	495	144	610	177
Total.....			\$877		\$1,804
Cash expenses ^b					
Combine hire.....	acres	..	..	15	45
Seed.....	pounds	131	13	321	54
Limestone.....	tons	10	24	27	68
Phosphate.....	tons	1	14	9	90
Commercial feed.....	cwt.	55	138	90	208
Grains.....	cwt.	37	52	2	3
Baby chickens.....	number	200	16	500	40
Miscellaneous.....			15		26
Total.....			\$272		\$ 534
Net returns ^c			\$605		\$1,270
Increased net returns per added man-work unit.....					\$ 13.57

^a Includes products sold and used in the household. Values used are based on 1936-1942 Illinois prices adjusted to Johnson County conditions.

^b 1946 prices adjusted to Johnson County conditions.

^c Gross income minus cash expenses. This figure should not be confused with farm earnings. To ascertain farm earnings an adjustment would have to be made for change in inventory and the value of unpaid family labor would have to be subtracted. Net returns is the amount of money available for family living, taxes, machinery, fence, building repair, and the payment of interest and principal on borrowed funds.

of corn-wheat-hay-hay; 44 acres in a rotation of wheat-pasture-pasture-pasture; and 22 acres would be kept in permanent pasture. Soil conservation practices would be used where needed, three to four tons of limestone and approximately 1,000 pounds of rock phosphate would have been applied per acre, the land to be used for hay would be seeded to alfalfa and timothy, and the land to be used for pasture would be seeded to a Lespedeza mixture. Corn production would increase from 168 to 240 bushels and wheat production from zero to 306 bushels. Twenty-one tons of mixed Lespedeza hay would be replaced by 30 tons of alfalfa timothy hay. Production of pasture would increase from an estimated 3,965 to 7,008 animal unit pasture days. (Table 4)

Under the suggested program, the cow and calf system would be used and the beef calves sold soon after weaning in the fall. The improved land-use plan would provide enough pasture and roughage for 13 beef cows, four dairy cows, the calves they produce, and the heifers necessary to replace them. The dairy cows would provide milk and butter for use in the home, some skim milk for the hogs and chickens, and some butter-fat for sale.

The corn and wheat produced would be enough to feed out two litters of hogs, and to provide most of the grain needed in the rations of 200 hens and the young chicks used for replacement and sale. The beef and dairy cattle would receive no grain. (Table 4)

The beef cattle enterprise would account for approximately one-fourth of the gross returns of \$1,804. The suggested plan roughly doubles cash expenses and net returns (with products valued at prewar prices) and requires 49 additional man-work units. For each man-work unit added the operator will receive \$13.57. (Tables 4 and 5)

This farm is representative of a large number of those in the rolling area that need reorganizing to provide a satisfactory living for the farm family. Although the suggested plan is a definite improvement over the current one, it still does not use all the available labor nor provide a high standard of living. Of the other possibilities for increased income that are open to the operator, three seem to be the most rational: (1) he can buy or rent more land so he can keep more beef cattle; (2) he can intensify his farming program; or (3) he can spend part of his time working off the farm.

By adding 80 acres of improved pasture and meadow (65 acres of pasture, 15 acres of meadow) to his farm the operator can carry 20 more beef cows, sell 14 more grass calves, and four more cull cows each year. Net returns would increase from \$1,270 to \$2,092 and man-work units required from 224 to approximately 311. But because of the scarcity of salable or rentable land in some localities this alternative is not open to many farm operators in the rolling area.

Conventional ways of intensifying the farming program in this area are to increase the size of the poultry flock or replace part or all of the beef herd with dairy cattle. The addition of an apple or peach orchard or a few acres of small fruits, such as strawberries or raspberries, are possibilities that should also receive serious consideration.

Quite a few farm operators in this area earn a considerable part of their income by working off the farm. This is a very satisfactory arrangement for an operator who has steady off-farm employment. However, an operator who must seek temporary employment in slack seasons, should make every effort to organize his farming program so it will provide him with work the year round before turning to this alternative.

The suggested plan is a major step toward the optimum use of resources but not necessarily a final goal. First, the pasture program outlined is based on an improved lespedeza grass mixture. Although this program greatly increases the number of animal units that can be carried, continued land improvement will make it possible to grow more productive pasture mixtures that include fescue, ladino clover, alfalfa, and other crops which will provide still greater carrying capacity. Also, the estimated production per unit of livestock is relatively low when compared with that obtained by some of the better farmers in southern Illinois who have improved the quality of their livestock. An increase in the number and an improvement in the quality of livestock will increase both net returns and the number of man-work units needed to carry on the farming program.

W. R. BAILEY, J. E. WILLS, A. J. CROSS

FEDERAL WAGE-HOUR LAW

In 1938 the Congress used its interstate commerce powers to attempt to eliminate conditions detrimental to the health, efficiency, and well-being of workers, and to eliminate unfair competition.

This law was amended in 1949 providing for:

1. A minimum wage of 75 cents an hour.
2. Time and one-half pay for overtime after 40 hours (with exceptions).
3. A minimum age of 16 years for general employment (with exceptions).

The Act does not provide for different rates of pay for Sundays or holidays. The number of employees makes no difference, and it applies to male as well as female employees NOT SPECIFICALLY EXEMPT.

Coverage

Agriculture has a favored position in this law and, in general, is exempt from its provisions. However, coverage is primarily an individual

matter depending upon the nature of the employment. The same employer may have some of his employees covered by the Act and others not. The test is whether the employee is *engaged in commerce* or in the *production of goods for commerce*. The general minimum wage requirement is that each covered and non-exempt employee must be paid at a rate of not less than 75 cents per hour.

"Commerce" is defined to mean "trade, commerce, transportation, transmission, or communication among the several states or between any state and any place outside thereof." (Examples — telephone, telegraph, radio, transport companies.)

"Production of goods for commerce" means employment in "production, manufacturing, mining, handling, transporting, or in any other manner working on such goods, or in any closely related process or occupation directly essential to the production" of such goods. (Examples — automobiles, coal, production of fuel and electricity, repair on buildings in which interstate goods are produced.)

The administrator of the wage and hour division has issued regulations covering certain types of businesses related to agriculture. Agricultural co-operatives, forestry or lumbering operations incident to farming, area of production, and industries of a seasonal nature are so covered and are briefly discussed below.

Employees of agricultural cooperative associations are granted no express exemption from the Fair Labor Standards Act. Since farmers own the cooperative, the question presented is this: Is a farmers' cooperative a "farmer" within the meaning of the law? The phrase "by a farmer" was intended to cover practices performed either by the farmer himself or by the farmer through his employees. Cooperatives are separate entities from the farmers who own them and the work is not performed *by* a farmer but *for* the farmer. However, not all employees of farmers' co-operatives are subject to the Act. There are exemptions for certain executive and administrative positions; also, like other employees, they must be engaged in interstate commerce or in the production of goods for interstate commerce to be subject to the Act.

Agriculture is sometimes used in the sense of including the science of cultivating forests. But the Fair Labor Standards Act indicates that forestry and lumbering will be considered agricultural only if "performed by a farmer or on a farm as an incident to or in conjunction with such farming operations." It follows that employees engaged exclusively in forestry or lumbering operations are not exempt. To take advantage of the agricultural exemption, these operations must occupy only a minor portion of the time of the farmer and his employees.

Before the recent amendments to the Fair Labor Standards Act,

certain "fringe" employees were covered by the Act, not directly, but by interpretation of the courts. For example, employees of a local fertilizer company selling to local farmers were included even though they were several degrees from the production of the agricultural goods which allegedly flowed into interstate commerce. Apparently the legislators meant to reduce the size of this "fringe" group by removing such employees from the provisions of the Act. Whether they have been successful will depend on future interpretations of courts.

"Area of production" and "industries of a seasonal nature" are discussed under "exemptions."

Exemptions

For agriculture and closely related fields of industry, the Act contains specific exemptions from the wage and hour provisions for employees employed in:

1. *Agriculture*. "Agriculture" includes farming in all its branches and among other things includes the cultivation and tillage of the soil, dairying, and the production, cultivation, growing, and harvesting of any agricultural or horticultural commodities, the raising of livestock, bees, fur-bearing animals, or poultry, and any practices (including any forestry, or lumbering operations) performed by a farmer or on a farm as an incident to or in conjunction with such farming operations, including preparation for market, delivery to storage or to market or to carriers for transportation to market.

2. An *irrigation system* not operated for profit.

3. An *area of production* when engaged in handling, packing, drying, storing, ginning, canning, pasteurizing, or preparing in their raw or natural state *agricultural or horticultural commodities* for market, or making *dairy products*. Area of production is defined as an area where the business is located in open country or in a rural community and 95 percent of the commodities come from normal rural sources of supply (farms or farm assemblers) not more than the following air-line distances from the plant or business: (a) ginning cotton—10 miles; (b) operation on fresh fruits and vegetables—15 miles; (c) storing of cotton—20 miles; (d) operations on tobacco, grain, soybeans, poultry or eggs—50 miles; (e) operations on all other agricultural commodities—20 miles.

The Act contains exemptions from only the *overtime* (hour) provisions for employees employed in:

1. The manufacture of *dairy products* (first processing only), ginning, and *compressing cotton*, and in the *processing of cottonseed, sugar beets, and cane*.

2. The capacity of a *buyer* of poultry, eggs, cream, or milk in their raw or natural state.

The Act contains exemptions from only the *overtime* (hour) provisions *up to 14 weeks* per year for employees employed in:

The first *processing, canning, or packing of perishable or seasonal fresh fruits and vegetables*; or in the first processing, within the area of production, of any *agricultural or horticultural commodities* during *seasonal operations*; or in *handling, slaughtering or dressing poultry or livestock*.

Area of production is defined as an area in which the business is located in the open country or in a rural community and in which the first processing is performed on commodities, 95 percent of which come from normal rural sources of supply located not more than the following air-line distances from the plant or business: (a) grain, soybeans, eggs, or tobacco — 50 miles; (b) any other agricultural or horticultural commodity — 20 miles.

Industries of a seasonal nature include: (1) those which handle or process materials during a *season* occurring each year and production ceases the remainder of the year; (2) those which pack and store agricultural commodities in their raw or natural state and which receive 50 percent or more of the annual volume during a period not exceeding 14 work weeks. The exemption states that an employee may work in excess of the 40-hour week without overtime compensation if: (1) the employment does not exceed 14 work weeks in the aggregate during a calendar year, and (2) overtime rates are paid when working hours exceed 12 hours per day or 56 hours per week.

“Hot” Goods

It is unlawful to transport, sell, or ship in commerce, any goods produced in violation of the Fair Labor Standards Act.

Child Labor

The employment of a child under 14 in *any* occupation is “oppressive” child labor, unless specifically exempt. For mining and manufacturing occupations, the minimum age is 16. For hazardous occupations, the minimum age is 18.

The following are exempt from the child labor provisions:

1. Children employed in *agriculture* outside of school hours.
2. Children employed as *actors or performers*.
3. Children under 16 *employed by their parents* in an occupation other than mining or manufacturing.
4. Children delivering *newspapers*.

Records

If an employer is subject to the provisions of the Fair Labor Standards Act, no special form or record is prescribed. It is required, however, that the following information be kept:

1. Persons employed.
2. Wages.
3. Hours.
4. Facilities furnished.
5. Bonus paid.

Such records must be kept for three years and made available to the administrator of the wage and hour division at any time.

N. G. P. KRAUSZ



Director, Extension Service in
Agriculture and Home Economics

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TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production ¹⁰
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-
1934.....	93	86	76	96	79	68	71	80	68	75
1935.....	99	104	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	306	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	247	275	207	383	392	189	303	351	192
1949.....	192	218	218	200	343	346	176	308	325	176
1949 Mar....	196	226	226	204	284	354	170	306	333	184
Apr.....	195	224	226	203	275	321	158	308	319	179
May.....	193	225	220	202	288	309	153	308	313	174
June.....	192	222	221	201	306	328	163	306	316	169
July.....	190	219	217	200	326	366	183	306	313	162
Aug.....	190	214	218	199	363	293	147	308	323	170
Sept.....	191	215	224	198	392	287	145	309	335	174
Oct.....	189	210	213	196	471	608	310	306	321	166
Nov.....	188	206	207	196	457	393	200	308	314	173
Dec.....	188	204	202	196	349	325	166	313	329	180
1950 Jan....	188	204	201	199	337	379	190	319	329	183
Feb.....	190	209	209	198	240	307	155	326	330	181
Mar.....	189	210	209	200	247	325	163	332	...	187

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			May 1949	Current months, 1950		
	1935-39	1948	1949		March	April	May
Corn, bu.....	\$.66	\$1.89	\$1.17	\$1.23	\$1.20	\$1.27	\$1.35
Oats, bu.....	.31	.94	.63	.63	.71	.75	.80
Wheat, bu.....	.86	2.23	1.94	2.07	2.05	2.11	2.11
Barley, bu.....	.62	1.58	1.07	1.10	1.11	1.11	1.17
Soybeans, bu.....	.90	3.20	2.19	2.19	2.29	2.52	2.76
Hogs, cwt.....	8.52	23.71	18.62	18.10	16.10	15.60	18.60
Beef cattle, cwt.....	7.88	24.77	21.57	21.90	21.70	22.50	24.00
Lambs, cwt.....	8.36	23.44	23.36	26.60	24.20	24.50	24.60
Milk cows, head.....	58.00	194.17	198.33	195.00	205.00	210.00	215.00
Veal calves, cwt.....	8.66	26.29	25.63	24.80	25.70	25.70	27.20
Sheep, cwt.....	3.58	8.93	8.70	10.60	10.80	11.00	10.50
Butterfat, lb.....	.27	.73	.58	.57	.59	.59	.58
Milk, cwt.....	1.68	4.48	3.48	3.10	3.45	3.35	3.15
Eggs, doz.....	.19	.42	.40	.40	.28	.27	.26
Chickens, lb.....	.15	.30	.27	.30	.25	.26	.22
Wool, lb.....	.25	.42	.42	.42	.42	.43	.46
Apples, bu.....	1.08	2.33	2.38	3.65	2.05	2.15	2.50
Hay, ton ¹³	9.39	20.64	22.68	20.00	20.80	21.20	20.80

¹⁻¹³ For sources of data in tables see previous issue.

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SOME ETHICAL AND ECONOMIC FACTORS RELATED TO AGRICULTURAL POLICY

G. L. JORDAN

In order to determine whether any national government-supervised farm price or income support program is desirable and to evaluate any proposed price or income support program, it is necessary to evaluate the economic, social, political (in the broad sense), and ethical results which might reasonably be expected. Some of the non-economic aspects will be discussed first. But all aspects are related.

Looking Beyond the Immediate Dollar

How would you like for some Hitler or Stalin to tell you what you could raise, how you should produce it, to whom you could sell it, and the price you would receive? Impossible? Not at all. It could happen here. All that you need is a socialistic form of economy. As a farmer the only way you can prevent it is to oppose all measures which lead in that direction.

That leads up to the question of national farm policy. Professor R. C. Ross teaches our beginning course in agricultural economics at the University of Illinois. He says the attitude of many of his students — farmers' sons — is to favor getting all you can while the getting is good. Evidently the sons reflect the attitudes at home. Isn't that same attitude typical of labor unions and less enlightened businessmen? What does it all add up to?

Such an attitude is definitely materialistic. Materialism is the only "religion" sponsored by socialist Russia. Theirs is a militant materialism. All devices lead to that goal for them. They believe that an all-powerful state can bring about the material welfare of the people quicker than it can be done by any other measure. Truth is only relative for them. Rights of individuals are not important; the state is all important. To reach their goal all activities of individuals must be controlled. Disagreement with state-dictated policies or procedures is not tolerated. Dissenters are liquidated. That means that freedom of expression cannot be tolerated. Religious teachings and western philosophies are contrary to the dominance of materialism, hence, cannot be tolerated. Religion is discouraged and

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

what is permitted is state controlled. World domination is an ever present goal. The method used is revolution and destruction of all who interfere.

The destruction of opposition may be by Russian armies or fifth columns, but it is a lot cheaper for Russia if we weaken ourselves with class struggles. It is to Russia's advantage if we lose our moral and spiritual strength. It is to Russia's advantage if we become materialistic as she is — because we then have no advantage over her in the eyes of the people of other nations.

Dr. Charles Malik, Minister of Lebanon in the United States, in a speech before a United Nations group made these statements: "To the superficial observer who is unable to penetrate to the core of love and truth which is still at the heart of the West, there is little to choose between the soulless materialism of the West and the militant materialism of the East. . . .

"It ought to be very bluntly stated that a world that is relatively imperfect from the economic and material point of view, but that retains at its heart the core of *love* and *truth* and *freedom* which has for three thousand years characterized Western civilization at its best, is vastly to be preferred to any world, no matter how absolutely perfect materially and economically which rejects this creative core of love and truth and freedom."

What relation has this to agricultural policy? Later in this discussion we shall set forth some economic considerations which have a bearing on the desirability of features of agricultural policy from the short-term point of view. But the moral or ethical considerations far outweigh the short-term economic considerations. I believe that the long-time economic welfare of farmers and the nation coincides with what Western civilization has believed in the moral and ethical realms.

No civilization can last when one large segment, through political or military force, robs some other segment of the economy. The Roman Empire became rich as the result of military aggression and robbery of subjected peoples. But Romans became better pilferers and spenders than earners. Their morals deteriorated. Rome fell. Robbery, whether by military aggression, or taxation of one group for the benefit of another tends to reduce total output. Those who expect to be robbed have little incentive to produce more than they consume. The subsidized group falls into disfavor with the rest of society, with those whose consumption is reduced because they have to pay the bill.

Farmers are entitled to a *fair* share of the total income. Everyone agrees. They do not agree on the definition of "fair." Probably it means to most of us the income from a reasonable output at reasonable prices. What is reasonable? A reasonable output is that quantity which consumers are

willing to buy at a reasonable price. Not so large a quantity that prices decline below costs of efficient farmers; not so small a quantity that prices far exceed costs of production. A reasonable price will certainly be related to costs of production for that enterprise. It should allow efficient producers fair labor and management wages and fair returns on their investments over a period of years — wages and returns comparable to those obtained for equal work and skill and capital inputs in other lines of work.

Our greatest chance for survival and for maximum happiness of future generations is tied to the great nonmaterial values for which our ancestors were often willing to sacrifice material welfare. I refer to the belief in absolute truth, love of our fellow men, belief in the rights of the individual to life, liberty, and the pursuit of happiness, the submission of the state to the will of the people governed, the belief that peoples have minds and souls, and that there are nonmaterial satisfactions as well as material ones. Following the teachings of the great religions and philosophies of Western civilization (except Marx and his followers) will not set farmers against consumers, labor against employers or vice versa. Farm people are the most religious, the most conservative, the kindest people on earth. If they succumb to a dog-eat-dog materialistic philosophy there is no hope for the nation.

Mr. W. C. Mullendore, president of the Southern California Edison Company, also mentioned another important point. He said, "Constantly expanding paternalistic policies of government have oriented the minds of the American people toward reliance upon government for security (minimum wages, pensions, housing, etc.) and for directing and planning their lives. Thus these policies have seriously weakened and undermined the most vital sources of America's strength and the strongest foundations of all our once free enterprises, — viz., the individual American's self-reliance, initiative, inventiveness, pride in providing for his family, and willingness to take risks, in the hope of reward for successful endeavor, and to accept penalties for failure.

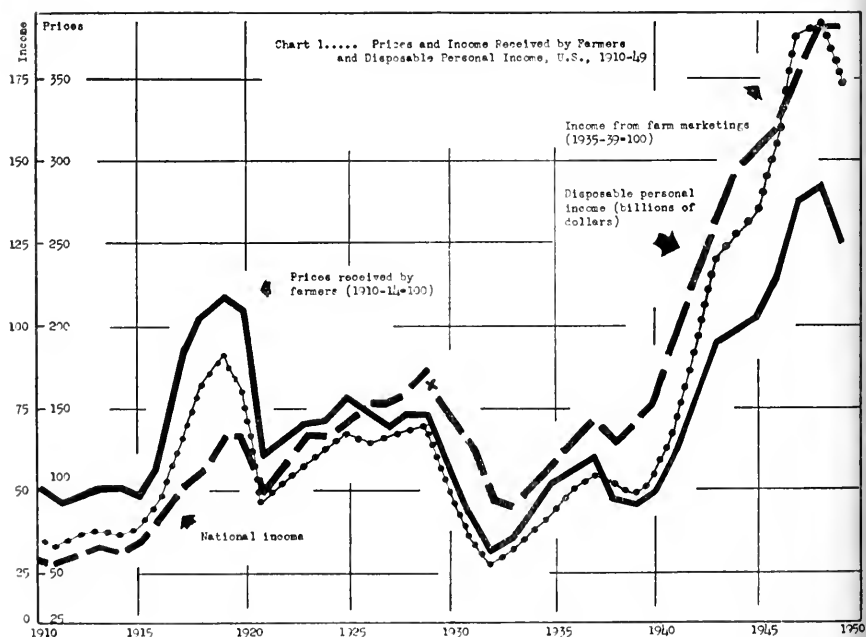
"All of these trends and forces are driving us toward the Socialist State for the simple reason that they eventually undermine and destroy the opportunities and incentives for that extra effort and additional production by the individual citizen which constituted the only secret of America's phenomenal productivity and development. The Socialist State, once it is established, means not only death to the free market and to the freedom of the individual, but so long as it lasts, it means a declining productivity, and hence a steady decline in the standard of living."¹

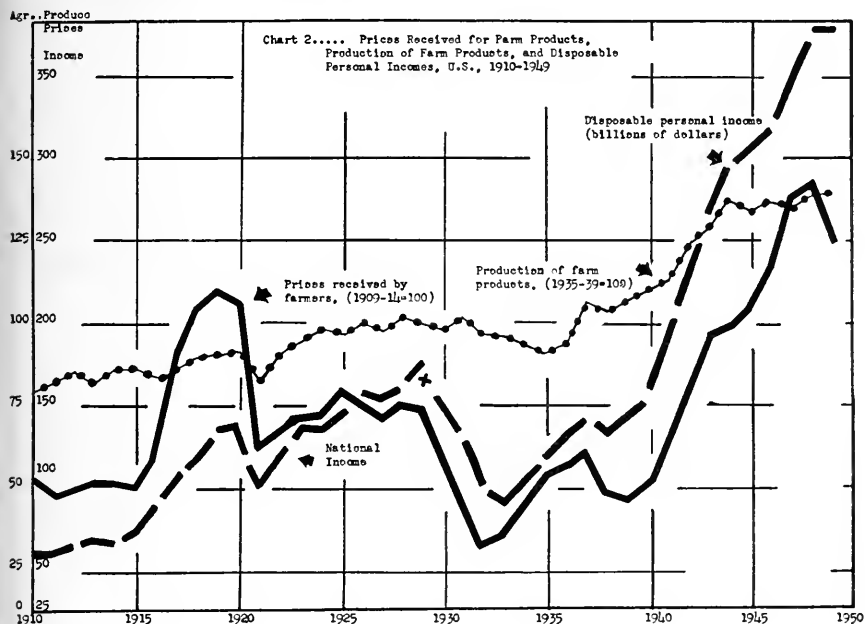
¹ Quoted from *The Equitable Society Farm Loan News*, May, 1950.

Economic Considerations

The dominant influence on the amount of income received by farmers is the ability of nonfarm people to buy farm products. This is shown in Chart 1 by the high correlation between changes in cash incomes from farm marketings and measures of consumers' incomes. Cash incomes from farm marketings rise and fall more (in percentage) than nonfarm incomes in times of pronounced changes in the latter. Over the past 40 years, except during war periods, there has been a tendency for total cash income from farm marketings to decline relative to total national income. The fraction going to employees has increased. But the number of farmers relative to the total population has also declined. Per capita farm income has held up better than total cash farm income. This is in line with an increasing level of living. We have been buying as much or more food than four decades ago and in addition we are producing and using many more and better quality "gadgets" and services. The important point is that agricultural income does and will fluctuate with nonfarm income and that, practically, there is no way for agriculture to prosper when the rest of the economy is "sick" without receiving an outright donation from the taxpayers, present or future.

Prices received by farmers are also closely related to the income of the rest of society, but prices are not so closely related as incomes (Chart 2).





Prices are affected both by the demand for and the quantity of farm products marketed. Compared with both farm income and nonfarm income, prices received by farmers have declined greatly during the past four decades. That is not necessarily an evil. In fact it is what one would expect in a period of rapidly improving technology. The same has happened in the case of automobiles, electrical appliances, radios, and hundreds of other manufactured products, if changes in quality are considered.

Farmers have increased their output (Chart 2 and Table 1) and sold it at lower and lower prices compared to consumers' incomes but farm incomes, as the result of both quantity of output and prices, have kept as closely in line with consumers' incomes as could be expected in an economy noted for its enormously increased output and consumption of nonagricultural products.

Obviously, farmers would not have produced the increased quantities over the decades if it had not been profitable to do so. The improvements in technology and resulting lowering of costs of production have made possible this increased output at lower prices (relative to the level of national income). Spurts in agricultural output come in prosperous times, but there is little decline in depressions. The increased output shown in Table 1 resulted from special war time demands and postwar export outlets. For the same reason there is a lack of balance in production which

TABLE 1. — CHANGES IN ACREAGE AND PRODUCTION

Item	Acreage			Production			
	1937-41 average (thousand)	1949 (thousand)	Change (percent)	Unit	1937-41 average (million)	1949 (million)	Change (percent)
Wheat.....	69,425	84,931	+22	Bushel.....	858.0	1,146	+34
Corn.....	91,763	87,910	-4	Bushel.....	2,576.0	3,378	+31
Oats.....	39,715	44,525	+12	Bushel.....	1,130.0	1,323	+17
Cotton.....	26,358	27,359	+3	Bales.....	13.2	16	+21
Soybeans ^a	8,754	11,409	+30	Bushel.....	77.0	222	+188
Potatoes.....	2,913	1,924	-34	Bushel.....	361.0	402	+13
Hay, all tame ^b	46,126	51,661	+12	Tons.....	68.0	81	+19
Hogs (live weight).....				100 pounds	157.0	188 ^d	+20
Cattle and calves (live weight).....				100 pounds	151.0	184 ^d	+22
Milk.....				100 pounds	1,079.0	1,184	+10
Eggs.....				Dozen.....	3,256.0	4,686	+44

^a Soybeans for beans.

^b Excludes soybeans, cowpeas, peanuts, and small grains cut for hay.

^c Harvested acreage, all others are planted acreages, except cotton, which is acreage under cultivation July 1.

^d For 1948, not yet available for 1949.

Source: The Agricultural Situation, May, 1950, Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C.

will have to be corrected as less reliance is placed on foreign outlets. Following large increases in output a decline in domestic or foreign demand can greatly reduce prices. However, overproduction is temporary because population soon catches up with output.

Costs of production of grain declined more than those of livestock. Changes in costs affect willingness to increase or decrease output. They also affect the equity of different levels of price supports. But costs have not changed uniformly for all products. For example, costs of producing corn have been calculated in selected areas of Illinois for about three decades. When the relationship between costs of production per bushel are compared with prices received for all farm products by U. S. farmers, the decline in costs of producing corn in Illinois compared with changes in the price level are apparent. This reduction in the cost of producing corn tends to lead to increased production of corn up to the point where profits are just as large from some other crop. As a rough measure of change, we let costs of production per bushel in 1935-1939 equal 100 as a base and average prices received by U. S. farmers for all farm products in 1935-1939 equal 100 as a base and divided the cost index by the prices received index to see whether costs of producing corn kept pace with the level of prices received. We found that in recent years costs of producing a bushel of corn were very low relative to prices received for all farm products. Both costs and prices received rose during and after World War II, but prices received rose much more. The relationships since 1935 were as follows: $[(\text{Cost index} \div \text{prices received index}) \times 100]$

1923-27 average...	119	1938.....	93	1942.....	62	1946.....	55
1935.....	97	1939.....	88	1943.....	56	1947.....	78
1936.....	149	1940.....	103	1944.....	65		
1937.....	71	1941.....	72	1945.....	70		

This means that costs of production of corn in Illinois had declined 45 percent relative to U. S. farm prices between 1935-39 and 1946 and 22 percent relative to U. S. farm prices by 1947. If we had used an earlier base this reduction in costs would have been still greater. In contrast to the reduction in the cost of producing a bushel of corn (when compared with the price level of all farm products) the cost of producing livestock has not declined (on the same basis of comparison). Costs rose relative to prices received. Comparable figures for the cost of producing 100 pounds of hogs in Illinois were as follows:

1923-27 average...	102	1938.....	85	1942.....	97	1946.....	111
1935.....	102	1939.....	87	1943.....	104	1947.....	132
1936.....	104	1940.....	103	1944.....	115	1948.....	109
1937.....	116	1941.....	97	1945.....	109		

Farm income can be increased by reducing output. We have seen that in the past the size of farm incomes is closely correlated with incomes of all of the people. We have also seen that prices of farm products have declined compared to the incomes of all of the people but that farm output has increased substantially. The question arises, "Would farm incomes have been higher if *total* farm output had been less, assuming the same level of national income?" Assuming no increase in imports the answer is definitely "yes."

The reason why reduced output would have resulted in increased farm income compared with total national income is because the demand for food is such that after correcting for changes in consumers' ability to buy, prices rise a greater percentage than quantity decreases and prices fall a greater percentage than quantity increases. This means that the smaller the quantity the larger the gross income. That applies to all farm products combined and to our most important individual farm products. We are not sure just what the relative changes in prices and quantities are for all farm products combined or would be with long continued curtailment of production. But they probably lie within the range of a change of between 15 and 20 percent change in prices with a change of 10 percent in quantity in the opposite direction. To the best of my knowledge all economists are agreed that in the short run, gross income from marketings of all farm products combined declines with increases in total farm output, assuming no changes in demand.

The moral or ethical considerations involved in reductions of output of

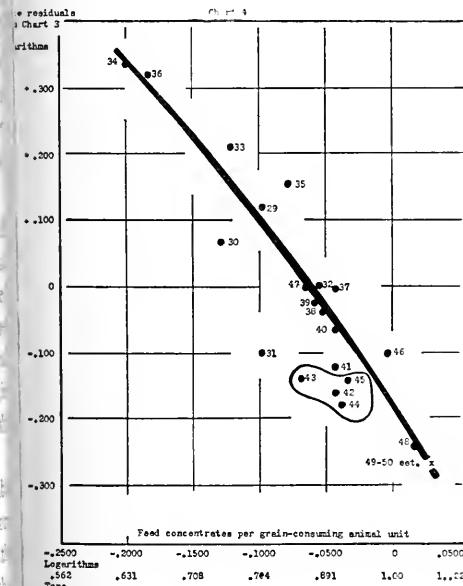
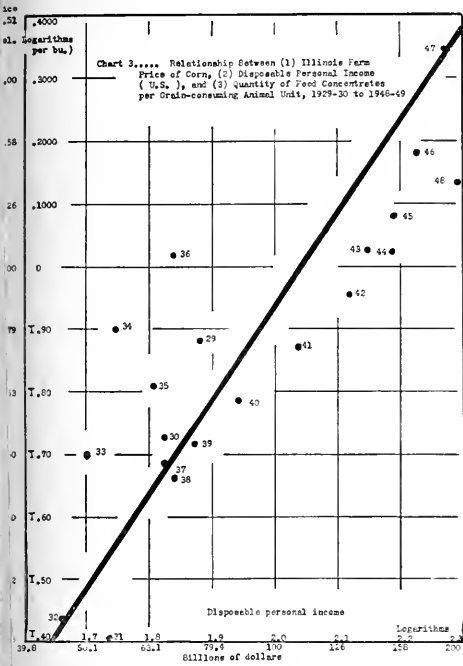
all foodstuffs are quite as important as the short-time economic considerations. The long-time economic considerations agree closely with our ideas of moral values; our ideas of fair treatment.

For *individual* farm products the relationships between the volume of marketings and prices vary, but in general prices change a greater percentage than quantities marketed and in the opposite direction so that gross income from marketings increases as marketings decline and decreases as marketings increase. However for most individual commodities substitutes are available, such as pork for beef or margarine for butter, hence price rises are limited even when the quantity marketed is greatly reduced. There is no substitute for food, in total, so prices are likely to increase greatly as supplies become very scarce. Over the longer period of time there can be shifts from a meat to a cereal diet if prices become very high relative to incomes. But we need only a limited quantity of food so prices tend to decline rapidly with very large supplies unless there is an alternative outlet into industrial uses or into the export market.

One characteristic of the demand for our most important Illinois farm products is the fact that the change in gross income in response to a given change in quantity is different at a low level of marketings than at a high level of marketings. This is caused by the possibility of substitution when prices of a given commodity are very high and by the ease of satiation with an unusually large output. For commodities for which substitution is easy and satiation of desires easy it might be that at a very high level of marketings the gross income would be raised substantially by removing a substantial quantity from the market. At a very low level of marketings gross income might conceivably be increased by adding to the market supply, but the result might be a reduction in total value, depending on the relationships of quantity and price for the given commodity.

Relation of quantity to prices and gross value of corn. We shall use corn to illustrate the relationship between changes in quantity and changes in prices. Corn price changes from year to year are explained fairly well by changes in disposable personal incomes in the United States and by the changes in the quantity of all feed concentrates per animal unit. Both factors are important. The higher the incomes the higher the price of corn. The larger the feed concentrate supply per animal unit the lower the price of corn (Charts 3 and 4).

After allowing for the influence of changes in the level of disposable personal incomes, i.e., holding that influence constant, the price of corn changes more percentage-wise (and in the opposite direction) than the quantity of feed concentrates available per animal unit. That means that the larger the supply of concentrates the lower the total value of corn and the lower the supply of concentrates the higher the total value of corn.



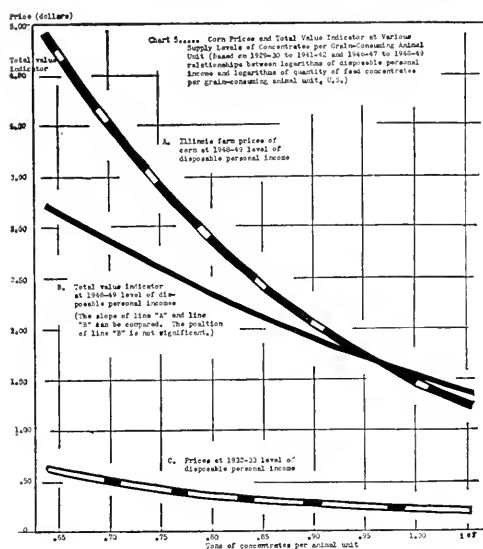
That held throughout the entire range of feed supplies since 1929, including the very low level of .63 ton per animal unit in 1934-35 and the very high level of 1.04 tons per animal unit in 1948-49 and will hold for the still higher level of 1.06 tons per animal unit in 1949-50.

That is a characteristic behavior for most important field crops for which studies have been reported if the crop is not dependent on export outlets. In the case of corn, and presumably for other crops produced for the domestic market, a crop reduction program would increase the total income and also presumably the net income from that crop. Whether or not gross income from the farm were raised or lowered would depend on what was done with the land taken out of the given crop. For the individual farmer any use of that land would appear to be net gain, but if all farmers put it in the same crop, it might greatly reduce the price of that crop, and reduce somewhat the income from it.

Many persons wonder how much benefit a federal loan program is to the farmer. They like to say that the price would have been some definite figure had there been no program. Such a figure is hard to estimate with any degree of assurance, but the

charts on corn prices can be used to make such estimates. For example, the 1949-50 level of disposable personal income will probably be at least

as high as in 1948-49 or 193 billion dollars (the logarithm on the lower horizontal scale is 2.28556). The price read from the left-hand scale is .37000 in logarithms, which is the equivalent of \$2.34. This is the estimated price of corn in 1949-50



if there had been about .866 tons of feed concentrates per animal unit. But there is an abnormally large supply of feed concentrates per animal unit this year, 1.06 tons. To correct for this large supply of feeds the price is reduced substantially. The reduction in logarithms is .27. Therefore, the logarithm on Chart 3 of .37 is reduced by .27, leaving a logarithm of .10. This is the equivalent of \$1.26, the estimated weighted average price of corn to Illinois farmers from October 1949 to September 1950.

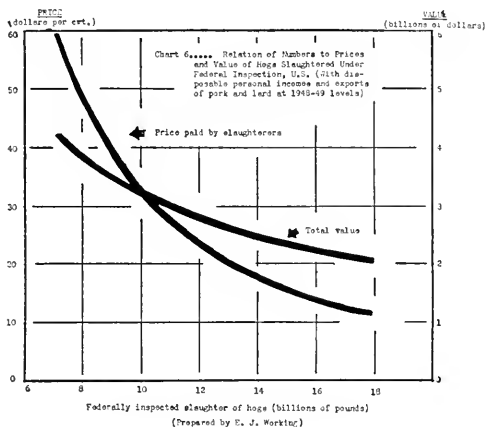
In years of bumper feed grain crops and increasing livestock numbers the harvest-time price is quite low and the seasonal rise from December to May is exceptionally large. That took place this year. The Illinois farm price rose from \$1.18 in December to \$1.35 in May. The spread might have been still greater without the loan. But the rumors that farmers might have received only 50 cents a bushel for this year's corn crop were nonsense. Here are a few other computations:

Income level		Feed supply level	Estimated price of corn
1948-49 (193 billion dollars)	1948-49	1.04 tons per animal unit	\$1.35
	1941-42	.90 ton per animal unit	\$2.10
	1934-35	.63 ton per animal unit	\$5.11
1932-33 (45.8 billion dollars)	1948-49	1.04 tons per animal unit	\$.155
	1941-42	.90 ton per animal unit . . . . .	.242
	1934-35	.63 ton per animal unit . . . . .	.588

Professor E. J. Working computed the price-supply relationships for hogs and found that the price behavior is much like that which I found for corn. The price declined more than the quantity increased and increased more than the quantity decreased. The smaller the quantity of hogs slaughtered, the higher the gross income from hogs (Chart 6). Like the corn illustration, these relationships apply to short time changes. They

might be different over a period long enough for consumers to become accustomed to different diets.

According to my calculations it would not pay to store corn from a year of bumper crops of feed grain and place the stored amount on the market in a year of low feed grain production if there were no change in demand (disposable personal incomes) or in the number of animal units on farms. Gross incomes would be increased the year in which the crops were removed from the market, but the gross income would be less for the short crop plus the sales from storage stocks than it would be from the short crop alone (Chart 5). Also the reduction in gross income in the out-of-storage year would be greater than the gain in gross income in the into-storage year. The only times when gross income of all farmers combined could be increased by carrying corn from one year to another would be when demand increased or livestock numbers increased.



World Prices Affect Domestic Prices of Some Commodities

In cases of commodities for which we are on an import basis, the world price plus costs sets an upper limit. If we are the dominant importer our demand will have a major influence on the world price. For those commodities for which we are on an export basis the world price sets a floor. If, for example, the export market would take increased quantities of soybean oil and soybean meal at but slightly lower prices it might well pay farmers as a group to reduce corn acreage and put the acreage in soybeans. If the soybean products had to be sold in the domestic market, I am not sure whether the increased quantities would bring as much lower gross income as the reduced corn crop would bring higher gross returns. I doubt whether the substitution would be profitable under price relationships that would be likely to exist when we were on an export basis for soybean products, except when the exports were financed by the U. S. government.

Some Effects of Government Programs

In judging the effects of short crops and long crops and the desirability of any particular government program or any program at all, it is neces-

sary to determine what the price would be without a program and what it would be with a program. It is then necessary to determine what gross and net incomes would be under either circumstance. These calculations cannot be made with much assurance even by experts; they can be made with considerable less assurance by laymen. The response of price to changes in quantity at all levels of output must be known or estimated. The response actually changes at every level of quantity of some crops, corn for example.

A. If it is a question of storage of nonperishables from a year of a bumper crop to a year of a short crop under a government loan program, the following factors have to be considered. Here we assume no changes in demand as represented by consumers' ability to buy. We also ignore government subsidies to farmers—i.e., cash contributions which the government does not expect to recover from the later sale of stored products.

1. Presumably the government loan rate will be higher than the market price would have been without a loan, particularly at harvest time.

2. The cooperating farmer obtains a higher price and a larger gross and net income for that crop than the rest of society would have been willing to pay for so large a crop had not part of the crop been removed from the current market.

3. Unless restricted by marketing quotas, the noncooperating farmer can obtain a higher price currently than would have been possible had there been no loan program.

4. If the stored product is placed on the domestic market following a short crop, the price will then be depressed below the level which would have existed had there been no carryover.

5. The gross and net incomes of farmers would be reduced during the short crop year because of the government held stocks being placed on the market. That is especially apparent if the farmers are not permitted to redeem the stored product and thereby obtain the higher price for it.

6. Prices have been partially stabilized; farm incomes have become more unstable as the result of the program. Farmers' incomes were higher than they would have been without a crop removal program during the year the loan program was effective and lower during the short-crop year in which the stored stocks were added to the market supply. Farmers have drawn part of their income in advance.

7. For some crops storage programs have secondary effects. For example: exceptionally large corn crops are typically the result of weather conditions. If there were no price support program involving

removal of part of the crop from the market, corn would be cheap relative to hogs and other livestock. Hog numbers would increase to take advantage of low-priced corn. In case of a drouth, hog numbers would be reduced. Wide variations in corn marketings lead to wide variations in the quantity of livestock and livestock products marketed. Stabilizing the quantity of feed reaching the market tends to stabilize the livestock output.

On the other hand if there were any known regularity in occurrences of drouths and exceptionally large crop yields the lack of stability of livestock numbers might help stabilize national cash farm income. When drouths came farmers who might have lost their crop might have income from livestock which they would liquidate. The individual cash grain farmer would not have the livestock to sell, hence would have his income greatly reduced because of the failure of his crop. That is his predicament under any circumstance unless he stores his own corn for sale in a later year. The liquidation of livestock during drouths helps to stabilize the flow of total food supplies to consumers.

B. If the government owned stocks are dumped on the foreign market, or given to foreign nations who otherwise would not have purchased them, or given to people in this country who would not have purchased them or competing goods, or if the crops are destroyed, the taxpayers as a group have made a donation to farmers and farm incomes are higher than they would be without any program. The net advantage to farmers is reduced to the extent that their payments of federal taxes are thereby increased. That would be a relatively small amount. Most of the bill would be paid by nonfarm people.

C. If there were no government price support program, farmers and others would store and carry corn, for example, from a year of bumper crops to a later period. The lower the price relative to prices of livestock and other commodities the more they would carry over. Presumably the price would be lower than a government loan or there would be no reason to have a government program.

D. In contrast to price support measures involving carryovers with the resulting increased quantity appearing on the market later, actual reduction of output of all farm products combined should lead to higher prices and larger gross and net farm incomes.

Unless part of the farm population concurrently left the farm and they were employed and equally productive in industry, commerce or services the total volume of goods and services of the nation would decline. That would mean a reduction in the level of living for the nation as a whole.

It would be a change in the distribution of the national income in favor of farmers as a group.

E. The individual farmer cannot afford to reduce output unless other farmers do likewise. The individual farmer's output is so small that any change he makes will have no appreciable effect on prices. It is therefore necessary to have cooperative action. That is the reason that the farmers cannot depend on voluntary participation but programs must be enforced by the government.

Effects on the whole economy. What we need is a high level of production of both farm products and nonfarm products and services with the quantities of output of each based on our desires, needs, and willingness to buy. If expenditures for farm products are low relative to expenditures for nonfarm products, it means either that consumers can satisfy their food needs at bargain prices or that they have enough food and want more automobiles, houses, electrical gadgets, or something else. If farm incomes are low, it will be because (1) farmers are flooding the market with excessive amounts of farm products, or (2) consumers do not have the ability to buy. The correction of either cause of farmer distress is not easy. If farmers flood the market in prosperous times and prices are low, the logical thing to do is to reduce output. Under a competitive capitalistic economy low profits would tend to drive out the least efficient farmers. That is a slow and painful process and the net result is an extended period of farm depression. However, the usual cause of farmers' distress is a national depression. Nonfarm people lose their ability to pay reasonable prices for farm products.

The nation as a whole can remain relatively prosperous for several years during which farmers are not prosperous if the cause of the farmers' difficulties is excessive farm output. The farmers' ability to buy industrial products is curtailed but consumers pay low prices for food and the large volume of farm output requires lots of handling, transportation, storing, financing, and processing, thereby helping to maintain urban employment and prosperity.

Farmers can never be prosperous when nonfarm people are suffering from excessive unemployment or low incomes unless they are handed a gift by the rest of society.

During a recession prices of farm products fall before and farther than prices of nonfarm products. The reason is that farmers have no alternative but to continue a high level of output for which fewer dollars are being spent by consumers. Industry, being unable to reduce costs appreciably, shuts down, thereby reducing output but holding up prices on the reduced output. Neither group can be blamed. Everybody suffers.

Being judged "not guilty," unemployed workers ask for "unemployment benefits" and farmers ask for government assistance. Both could be avoided if depressions could be avoided.

During recoveries prices of farm products rise promptly and usually rise more than prices of nonfarm products unless there is a large accumulated supply hanging over the market. Then the improvement is represented in larger purchases with a smaller rise in price.

During periods of national prosperity, farmers need not worry about the size of their gross income. They always have to worry about the size of their net income — that is, they always have to worry about costs. In periods of prosperity bumper corn crops will bring low prices if dumped on the market in December but livestock numbers will increase and there will be a larger than normal seasonal rise from December to May. At the same time livestock will bring relatively high prices because consumers are able and willing to pay high prices. They are forced to pay high prices, not by the farmer but by other consumers who wish a larger quantity at current prices. The low prices of corn from bumper crops are accompanied by low costs per bushel because of the larger yield, hence both the gross income and net income of farmers are reduced much less than the price per bushel.

Answers to Important Questions

We have tried to answer several questions bearing on the desirability of proposals which have been or may be made. They may be summarized (too briefly) as follows:

QUESTIONS BEARING ON THE EVALUATION OF NATIONAL AGRICULTURAL PROGRAMS

1. What are the causes of declines and rises in farm incomes?

Changes in industrial activity and in the volume of bank loans and investments. The latter involves the creation or retirement of debts by private parties or governments.

2. What is the relation between farm prices and farm income?

- a. Are high prices associated with high incomes and low prices associated with low incomes?

Usually, because of large changes in demand and small changes in supplies of farm products.

- b. Are low prices the cause of low farm incomes?

The real cause of both low farm prices and low farm incomes is a falling off in the ability of nonfarm people to buy farm products. Declines in export demand are sometimes important.

3. What are the causes of low farm prices?
 - a. Low level of domestic demand?
Yes
 - b. Low level of foreign demand?
Yes
 - c. Too much production?
For all farm products combined the answer is usually "no." For any particular farm product, the answer may be "yes."
4. When demand falls off, can farm income be increased by reducing farm output?
Yes. A reduction in output of farm products results in greater gross farm income at any level of demand.
5. What are the effects of reduction of farm output on society or the nation?
We would have less to eat and wear.
The farmer would not be forced to provide food at ruinously low prices in periods of depression.
6. Does gross farm income increase as much as prices rise when farm output is reduced?
No. The loss from reduction in volume partly offsets gain from rise in prices.
7. Does net farm income increase when farm output is reduced?
Yes. Net farm income increases even more than gross income.
8. If a nonperishable crop is stored by the government and put on the market during later crop years (assuming no change in demand) will gross income to farmers be increased during the into-storage year?
Yes.
9. Will gross income to farmers be reduced during the year of out-of-storage?
Yes, probably.
10. Will gross income for both years be increased or decreased?
Likely to be decreased even if the government absorbs cost of storage. In some cases it may be increased. If the demand changes in the meantime, the income will increase or decrease with the demand.
11. Will prices be stabilized by such operations?
Yes, there will be a tendency toward greater stability of prices.
12. Will incomes of farmers be stabilized by such operations?
No. There will be less stability of income. Incomes will be abnormally large in the year of into-storage and abnormally low in the year of out-of-storage. Farmers will collect part of the latter year income during

the into-storage period. To the extent that farmers are permitted to redeem the grain or other commodities put under government loan when short crops cause prices to rise they have an opportunity to receive relatively large incomes in both into- and out-of-storage periods with the government carrying the risk. Under these circumstances the government has no chance to offset its losses with gains. The total value for the two years is likely to be less with storage than without storage unless there has been an increase in consumers' buying power in the meantime.

13. If the government takes the crop off the market and gives it away or exports it, will farm prices and farm incomes be increased?

Yes, if the recipients would not have bought the products or competing products. This involves a transfer of wealth from taxpayers to the receivers of the goods and the farmers gain by finding an outlet for goods which might have depressed both prices and incomes. The taxpayer, through the consumer, becomes the farmers' customer.

14. What is the impact of farm financial distress on the economy?

If farm incomes decline, farmers become poorer customers of other sectors of the economy.

If farm financial distress is the result of excessive output during a period of general prosperity, the impact on the economy is less severe and the farm distress may last a long time. The harmful effects of the reduced buying power of the farmer are partly offset by the added work initiated by the large farm output, more services in handling, transporting, financing, storing, and processing the produce, and lower costs of farm products to the rest of the population.

If farm financial distress is the result of distress among farmers' customers (urban workers), a vicious circle of increasing unemployment and reduced buying power is generated.

As a general rule the dog wags his tail; the tail does not wag the dog. The welfare of the 75 to 80 percent of our population who live in urban areas affect the 20 to 25 percent who live on farms more than the welfare of the farm people affect the urban people. Depressions usually arise in the nonfarm or foreign outlet sectors of our economy.

15. Can United States farmers produce too much?

Yes. They can produce more than consumers are willing to pay for at prices remunerative to the farmers. Consumers also have desires for houses, automobiles, television and radio sets, permanent waves, expensive clothes, etc. It may be possible to increase exports of farm products but the prospects are not bright.

16. Under a free competitive economy how would reductions from excessive output come about?

The adjustments would be slow. Prices would decline. Doubtless part of the increased output would result from reduced costs of production. The more efficient producers would stay in business at the new and lower price level. The less efficient theoretically would quit farming and enter some other occupation. Actually such an off-the-farm movement would be slow.

There probably would be more "subsistence" farmers.

17. What are the functions of prices?

Chiefly to allocate the use of the factors of production — land, labor, capital, and management — to the production of goods and services in demand by consumer and to distribute the goods and services among purchasers on the basis of their desires and ability to pay. Arbitrary control of prices may lead to an undesirable distribution of productive resources. Income support programs may do the same where the income from a given farm enterprise is kept above the competitive level.

18. Can you have high price supports without production controls?

No, unless the taxpayers are willing to donate large sums to farmers.

19. Can society afford to subsidize farmers?

In periods of general prosperity the answer is no. Certainly society should not be expected to finance a program which would greatly curtail the quantity of food and textiles and tobacco available to all. Neither should the taxpayers be expected to subsidize workers by providing food at a price below the cost of production by efficient farmers.

In periods of depression society can afford to prevent the economic disintegration and demoralization of any group in the nation.

Especially is it an advantage to society to conserve the food producing capacity of the nation.

A Suggestion

Farm incomes are at a high level; most farmers are in good financial condition. The near-war phase of our economy is likely to last several years or there will be a shooting war. There is no prospect of a serious depression in the near future.

The public is critical of some of the results of recent farm programs — government cash outlays to farmers in a prosperous period, the high level of some food prices, and the widely publicized losses on government

owned perishables. Part of the criticism is not justified but the attitude exists.

Wouldn't this be a good time to do away with all farm price and income supports? We would then be in a strong position to obtain financial assistance when we really need it. We would regain the good will which we are losing. In the writer's opinion income supports are not needed in times of great national prosperity. Price supports are needed at such times only to induce quick shifts in production to satisfy critical war demands or to correct for such adjustments when they were made to win a war. Apparently neither adjustment needs government sponsorship at present.

Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. ⁹ Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. ¹⁰ Federal Reserve Bulletin of Federal Reserve Board. ¹¹ Preliminary estimate. ¹² Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹³ Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.



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TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-
1934.....	93	86	76	96	79	68	71	80	68	75
1935.....	99	104	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	306	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	247	275	207	383	392	189	303	351	192
1949.....	192	218	218	200	343	346	176	308	325	176
1949 Apr....	195	224	224	203	275	341	168	308	319	179
May.....	193	225	221	202	288	309	153	308	313	174
June.....	192	222	222	201	306	328	163	306	316	169
July.....	190	219	217	200	326	366	183	306	313	161
Aug.....	190	214	218	199	363	293	147	308	323	170
Sept.....	191	215	224	198	392	287	145	309	335	174
Oct.....	189	210	213	196	471	608	310	306	321	166
Nov.....	188	206	207	196	457	393	200	308	314	173
Dec.....	188	204	202	196	349	325	166	313	329	178
1950 Jan....	188	204	201	199	337	379	190	319	329	183
Feb.....	190	209	209	198	240	307	155	326	330	180
Mar.....	190	210	209	200	247	325	163	333	333	187
Apr.....	190	210	213	200	232	258	129	324	...	188

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			June 1949	Current months, 1950		
	1935-39	1948	1949		April	May	June
Corn, bu.....	\$.66	\$1.89	\$1.17	\$1.21	\$1.27	\$1.35	\$1.31
Oats, bu.....	.31	.94	.63	.57	.75	.80	.88
Wheat, bu.....	.86	2.23	1.94	1.85	2.11	2.11	1.99
Barley, bu.....	.62	1.58	1.07	.90	1.11	1.17	1.11
Soybeans, bu.....	.90	3.20	2.19	2.10	2.52	2.76	2.89
Hogs, cwt.....	8.52	23.71	18.62	19.30	15.60	18.60	17.60
Beef cattle, cwt.....	7.88	24.77	21.57	23.00	22.50	24.00	25.80
Lambs, cwt.....	8.36	23.44	23.36	24.80	24.50	24.60	25.00
Milk cows, head.....	58.00	194.17	198.33	195.00	210.00	215.00	220.00
Veal calves, cwt.....	8.66	26.29	25.63	24.80	25.70	27.20	26.70
Sheep, cwt.....	3.58	8.93	8.70	8.40	11.00	10.50	9.50
Butterfat, lb.....	.27	.73	.58	.55	.59	.58	.55
Milk, cwt.....	1.68	4.48	3.48	3.00	3.35	3.15	3.00
Eggs, doz.....	.19	.42	.40	.40	.27	.26	.22
Chickens, lb.....	.15	.30	.27	.28	.26	.22	.22
Wool, lb.....	.25	.42	.42	.42	.43	.46	.50
Apples, bu.....	1.08	2.33	2.38	3.05	2.15	2.50	2.50
Hay, ton ¹³	9.39	20.64	22.68	20.50	21.20	21.70	20.20

¹⁻¹³ For sources of data in tables see preceding page.

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Articles in This Issue

	PAGE
Current Crop Adjustments Mean More Feed Stuffs—L. J. NORTON..	1025
The Economic Position of Local Feed Manufacturers— R. J. MUTTI.....	1031
Legal Aspects of Ground Water Usage in Illinois—H. W. HANNAH..	1037

CURRENT CROP ADJUSTMENTS MEAN MORE FEED STUFFS

Increased Meat Production Is Likely Outlet in View of Present Price Relationships

Agriculture in the United States is now in the process of adjusting land use to postwar demands.¹ This means more animal products. Present prices and costs suggest that the increase will be primarily in meat.

Output of agricultural products expanded during the war and postwar years in response to higher demands. USDA estimates of outputs of farm products for sale and home use averaged about 25 percent higher in 1948 and 1949 than in 1940. By classes the ratios of 1949 to 1940 outputs were:²

Oil-bearing crops ³	1.91	Meat animals.....	1.15
Feed crops.....	1.60	Other vegetables ⁴	1.14
Food grains.....	1.50	Dairy products.....	1.11
Poultry and eggs.....	1.46	Sugar crops.....	.95
Tobacco.....	1.36	All livestock	1.20
Cotton.....	1.33	All farm products.....	1.26
Truck crops.....	1.30		

Between these years population increased by 17 million or 13 percent. Note that except for poultry and eggs the classes which increased significantly more than population are all crop products.

¹This was written before the outbreak of military operations in Korea. However, if the fighting is confined to that area, the situation facing American agriculture does not seem to be basically altered even with the greater emphasis that will be placed on military spending.

²The Farm Income Situation, December, 1949, page 6.

³Soybeans, peanuts and linseed.

⁴Potatoes, sweet potatoes and dry beans.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

The figure for feed crops overstates the increase in production because it refers to sales or use in farm homes. As more feed crops were sold or turned over to the government by way of loans in 1949 than in 1940, production figures show a smaller increase. Comparisons between 1939-1940 and 1948-1949 crops were:

	1939-1940	1948-1949	<i>Increases</i>	
	(million tons)		(percent)	
Feed grains ¹	97.2	132.6	35.4	36
Hay.....	91.2	99.4	8.2	9
By-product feeds.....	15.6	19.3	3.7	24
Other grains fed ²	4.0	4.5	0.5	12

¹ Corn, oats, barley, grain sorghums.

² Wheat, rye and imported grains.

Weighting these by relative feed values we get an increase of about 25 percent compared with an increase of 55 percent in the figure for "sales and home use." Moreover there has been at best only a moderate increase in pasture because of emphasis on cultivated crops. So total available feed increased less than 25 percent between 1939-1940 and 1948-1949.

But 1948-1949 crops yielded a surplus of feed in relation to current use. The carry-over of feed grains will increase by about 30 million tons between October 1, 1948 and October 1, 1950. Average annual supplies and estimated use from the 1948-1949 crops were:

	<i>Million tons</i>
Crops of feed grains.....	132.6
Wheat, rye and imported grains fed.....	4.5
By-product feeds.....	19.3
Total supply.....	156.4
Total concentrates fed.....	124.3
Other uses for feed grains.....	<u>17.1</u>
Total used.....	141.4
Excess.....	15.0

To use up this annual excess of 15.0 million tons of feed grains would involve an increase of about 9 percent in all feed use disregarding pastures. To use this, the index of all livestock products would need to be 131 percent of 1940 (1.2×1.09). It must be borne in mind that production of feed crops was high in 1948-1949. In the previous seven years (1941-1947) the production of feed crops averaged 113 million tons and with crops of this size we would have had a deficiency in feed supplies at 1948-49 and 1949-50 rates of use. But the excess from the 1948-1949 crops is on hand and available for use.

The acreage adjustment process will tend to increase feed output. The major crops to be cut are wheat, cotton, and corn. On July 1, 1950, the

acres for harvest of these was reported to be 28.6 million or 15 percent less than in 1949. In surveying the whole range of alternative crops, one finds no major uses for the land taken out of these crops except feed crops; hay, pasture, other small grains, grain sorghums, and soybeans. The latter crop yields 80 percent of a high protein feed. So even though we plant fewer acres of corn than in 1948-1949, more feedstuffs of one sort or another will be produced as adjustments in acreages planted proceed. On July 1, 1950, the increase in acres of such alternate feed crops was reported to be 13.0 million acres or 9 percent larger than in 1949. It should be borne in mind that time is required to increase acreage in such crops as hay.

Where are increases in livestock output most likely? Outputs and prices in 1949 relative to 1940 for the three groups of such products were:

	<i>Outputs</i>	<i>Prices</i>
Poultry and eggs.....	1.46	2.28
Meat animals.....	1.15	2.88
Dairy products.....	1.11	2.22
All farm products.....	1.26	2.54

Price ratios for poultry and eggs were even less favorable in the first six months of 1950 than in 1949. The reduction in chickens raised in 1950 indicates that for the time being poultry products will not expand. On July 1 there were 11 percent fewer chicks and young chickens on farms than a year earlier.

Even though the 1949 output of milk is relatively low in relation to 1940, the price ratio does not suggest that much increase in output is likely. The real question is: Will farmers expand milk production for butter production? Since 1940 the increased use of fluid milk, ice cream, and cheese has cut the quantity of milk available for butter production so that we have a deficiency of 900-1,000 million pounds of butter at prewar rates of consumption. This has been partially replaced by oleomargarine. What butter would be worth with no price supports and a gradual expansion in production no one can say exactly. But the wholesale price would likely not be over 50 to 55 cents a pound at the present general price level. To make 900 million pounds of butter would require 18 to 20 billion pounds of milk or about 16 percent more than current production. As long as current price levels for other farm products prevail, much expansion in the supply of milk for butter production is not likely. It is probable that the milk needed to provide for our growing population and increased per capita use of milk, cream, cheese, and ice cream will come from milk now going into butter which still utilizes about 28 percent of our total milk supply.

If the use of feed must expand and the increase is not likely to be in eggs or milk, then it must be in meat. The relative price ratios of meat animals support this conclusion. Our peak output of meat came in 1944 when it had been expanded to meet wartime demands. Estimated total production in 1944 and 1949 follows:

	1944	1949
	(million pounds)	
Beef.....	9,112	9,580
Veal.....	1,738	1,300
Lamb and mutton.....	1,024	600
Pork.....	13,304	10,650
Total.....	25,178	22,130

Thus meat production in 1949 was 3 billion pounds less than in 1944.

To go back to our previous peak production would require time. Our population is steadily increasing; say in 1952 it will be 155 million. Meat production equal to that of 1944 would then provide 162 pounds per capita, compared to 134 pounds used in 1937-41, 155 pounds in 1947 (our recent peak year in consumption) and an estimate of under 149 pounds in 1950. We could consume this higher quantity of meat but at lower than present prices. At present income and general price levels the decline in retail price would be about proportional to the increase in supply as consumers spend a rather stable proportion of their total income for meat. Prices to farmers would decline relatively more than retail prices if marketing costs did not decline. With a higher volume such costs might decline slightly as the overhead factors in distribution costs would be more completely utilized.

How much would this increase feed use? In the 1942-43 and 1943-44 feeding years we used about 140 million tons of feed concentrates compared to 125 million tons in 1949-50. The difference of 15 million tons is approximately equal to the average excess output of feed grains caused by the large 1948-1949 crops.

In 1944 the level of total livestock product output was about 7 percent higher than in 1949. Comparative ratios of output in 1944 and 1949 to 1940 were:

	1944	1949
Meat animals.....	1.31	1.15
Poultry and eggs.....	1.48	1.46
Dairy products.....	1.10	1.11
All livestock.....	1.28	1.20

Output of meat animals, poultry and eggs were all higher in the earlier year. At 500 pounds of grain equivalent per 100 pounds of live animals, 3 billion pounds of meat would require about 11 million tons of feed.

Would an expansion in meat take the same form as in 1943-44? It

would probably involve more cattle and fewer hogs. This view is suggested by the fact that beef production in 1949 was over 500 million pounds above 1944 while pork production was down by 2,650 million pounds. It is supported by the relatively greater current strength in cattle than in hog prices. Consumers seem to have a growing preference for beef.

We may draw three tentative conclusions:

1. Adjustments in crop acreages — cotton, wheat and corn — will increase acreages of feed crops and livestock or poultry must eventually utilize this feed.
2. Under existing price relationships expansion is more likely in meat than in milk or eggs.
3. Expansion is likely to be larger in beef than in pork.

These suggest that over-all expansion in feed production will be in hay, pasture, and other forage rather than in feed grains because beef production is based on these crops.

In Illinois the 1950 pig crop is estimated at 10,508,000, or within 5 percent of the peak number of 11,009,000 farrowed in 1943. For the U. S. the estimated pig crop of 1950 is 99 million or 23 million below the peak number in 1943. Thus in Illinois and in the corn-belt generally where surplus feed is concentrated, we are working up toward the 1943 peak in hog production. But for the country as a whole, we are far below the wartime peak. Concentration of the current increase in hog output in the corn belt will make for more economical production because cheaper feed is available there.

The number of cattle on farms only began to turn up during 1949 after declining since 1945. The increase during 1949 was quite general except in the western states, but percentagewise it was largest in the South Atlantic and South Central states. Since adjustments that will lead to more forage crops are likely in the cotton, corn, and wheat belts, the increase in cattle numbers will be quite widespread.

Relation to price policies. At this time our national policy is to support prices of feed grains, dairy products and eggs, but not of meat. This selective policy is in part due to price-depressing supplies in the supported items. Also, it is easier to support the prices of the readily storable grains, dried eggs, butter, cheese, and dried milk than the prices of meat.

Since we do not have a program to reduce total farm output but merely to shift land use from cotton, wheat, and corn, we will expand output of feed. To induce increased use of feeds, prices of feed grains should not be supported at too high levels. Today prices of hay and by-product feeds are free to seek their own levels and annual production is

currently consumed. But prices of feed grains are supported. Is the support level too high? Comparative figures for feeding ratios for various classes of livestock for May 15 for 1929-48 (a 20-year average), 1949 and 1950 follow:

	1929-48	1949	1950
Hog-corn (north-central states).....	12.4	15.2	14.2
Egg-feed.....	10.5	12.4	8.2
Chicken-feed.....	8.2	8.0	6.2
Turkey-feed.....	9.2	10.5	7.6
Milk-feed.....	1.14	1.15	1.08
Butterfat-feed.....	22.5	22.6	21.4

The meaning of these ratios is such that the lower the value, the less profitable it is to convert feed into the named items. The hog-corn ratio is still favorable but the ratios for eggs, chickens, and turkeys are below their long-time averages and also much lower in 1950 than in 1949. The chicken and egg ratios explain the sharp cut in poultry output in 1950. The milk and butterfat ratios are also on the unfavorable side of their long-time averages.

In relation to North European prices our level of support prices for feed grain is high. This tends to retard exports — a comparatively small outlet for our surplus feed grain.

Comparative prices of wheat per bushel (60 pounds):

May 15, 1950, farm price in Kansas	\$2.04
Official English price	1.75 (23s4d per 112 pounds)
Official French price	1.93 (2,477.5 fr. per 100 kilos)
Official German price	1.76 (26.95 marks per 100 kilos)

To maintain this high support price for wheat in the USA and to continue exports at the reduced 1949-50 level, we have in effect a two-price system and pay export subsidies of around 50 cents a bushel. This high support price on wheat affects the feed situation in two ways: to the extent that it reduces exports it requires fewer acres of wheat and so more of feed crops; but by holding the price high, it tends to prevent wheat from competing seriously with feed grains. It is estimated that 4.0 millions tons of wheat and rye were fed in 1948-1949 compared with 8.8 million tons in 1943-1944.

Comparative European prices for oats with U. S. corn (56 pounds) and oats (32 pounds) were:

May 15, 1950 farm prices in Illinois for:	
Corn	\$1.35
Oats	.80
Official price in England for oats	.86 (21s7d per 112 pounds)
Official price in France for oats	.80 (1,817.5 fr. per 100 kilos)
Official price in Germany for oats	.82 (22.0 marks per 100 kilos)

On May 15 the Illinois price of oats was 60 percent of the price of corn (a normal ratio). This was above the support price of 70 cents and also above the price prevailing at harvest time in 1950. But it is the level toward which the present support price of corn tends to draw the price of oats. The transportation and insurance costs of shipping a bushel of oats from central Illinois to Europe via New Orleans is about 11 cents a bushel. When freight costs are considered support prices of feed grains in the U. S. tend to hold down exports to Europe. This means that more of them will be used at home.

It is reasonable to conclude that feedstuffs would be used more freely if we had a more rational price support program for them and allowed their prices to seek more nearly their level in the market. A change in our policy in this respect would fit in better with our need to expand output of animal products.

The needed adjustments in acres and in feed use will work out most speedily if prices for feedstuffs and animal products are allowed to seek their own level in the market. This would not now be a low level in view of the current income and general price levels in the U. S. or the world. The income level of much of the world is either high by prewar standards or is rising as output and trade increase.

L. J. NORTON

THE ECONOMIC POSITION OF LOCAL FEED MANUFACTURERS

The prepared animal feed industry is characterized by a large number of establishments. The 1947 census of manufactures reported 2,689 in the United States, of which 127 were in Illinois. This number includes not only those primarily engaged in manufacturing feeds, but also farm supply dealers who made 2,000 tons or more of mixed feed during the year if they maintained separate records on their manufacturing activities. Data from other sources indicate that more than 6,000 firms in the United States, and over 450 in Illinois, produce mixed feed.

Three-fourths of the establishments had less than 20 employees each; plants with over 100 employees represented only 3.5 percent of all establishments (Table 1). Within Illinois are located 4.6 percent of the establishments with less than 20 employees and 8.4 percent of those with 100 employees or more.

The tremendous growth in the industry has been accomplished by an expansion by old firms and by the entrance of new firms. With respect to changes in share of output, 6.2 percent of the establishments accounted for 57 percent of the total value of products in 1939, whereas in 1947 it took 8.4 percent of the establishments to account for 57 percent of the

TABLE 1. — THE PREPARED FEED INDUSTRY, BY SIZE OF ESTABLISHMENT, 1947

Average number of employees	Number of establishments		Number of employees		Value added by manufacture	
	Number	Percent of total	Number	Percent of total	Thousand dollars	Percent of total
1-4.....	882	32.8	2,138	3.9	11,563	2.9
5-9.....	613	22.8	4,032	7.3	22,795	5.8
10-19.....	524	19.5	7,198	13.0	47,126	12.0
20-49.....	444	16.5	13,481	24.4	87,894	22.3
50-99.....	131	4.9	9,129	16.5	67,811	17.2
100-249.....	80	3.0	12,092	21.8	106,724	27.0
250 and over.....	15	.5	7,277	13.1	50,323	12.8
Total.....	2,689	100.0	55,347	100.0	394,236	100.0

value added by manufacture. This change indicates that either the aggregate output of small plants increased relatively more than that of large plants, or that some small plants whose output was included in 1947 were not included in 1939. *The competitive position of a particular mill as compared to other mills selling in the same market will be determined largely by the sum of the costs of all ingredients, its manufacturing costs, and its distribution costs.*

Factors affecting ingredient costs for different feed plants.¹ The cost of ingredients constitutes the major share of the total value of prepared feed. This share varies among different types of feed and because ingredient prices change relative to other costs. In one large mill in 1946 ingredients costs made up 86.2 percent of the value of poultry laying mash and 80.7 percent for mixed dairy feed. The cost of materials, containers, and supplies of census-reporting firms in 1939 and in 1947 represented 74.3 percent and 80.9 percent, respectively, of the total value of products.

A firm that had ingredient costs in 1939 that were 10 percent less than those of another firm could have had all other costs 29 percent higher and would still have been able to sell feed at the same price. In 1947 a firm with ingredient costs 10 percent lower could have had other costs about 42 percent greater and still could have priced his products competitively.

Ingredients consumed by the prepared feed industry in Illinois in 1947 represented the following percentage of total ingredients consumed (not including bone meal and minerals):

Soybean meal.....	22.3	Oats.....	6.4
Corn.....	16.5	All other grains.....	7.6
Millfeeds.....	12.5	All other grain by-products.....	10.1
Alfalfa meal.....	8.8	All other oil meal.....	2.9
Meat scraps and tankage.....	7.6	All other ingredients.....	5.3

Ingredient costs depend upon the price at the source of supply plus

¹ This section is based partly on data assembled by T. I. McCarty, formerly Assistant, Agricultural Economics, University of Illinois.

transportation costs to the point where the feed is manufactured. Many local points are able to secure soybean meal from a nearby mill. Corn and oats at several interior points are about 18 cents a hundred pounds cheaper than at either Chicago or St. Louis.

Interior points in western Illinois can secure millfeeds, and alfalfa, linseed, and cottonseed meal in carload lots by rail from the major sources of supply with aggregate transportation costs slightly less than to Chicago. Points in central and eastern Illinois would average the same to slightly higher freight costs on these ingredients than Chicago plants.

Feed plants located near large meat packing centers have a cost advantage in securing tankage and meat scraps; the rail freight rate from Chicago to points about 120 miles distant is around 15 cents a hundred-weight. Large plants usually have an advantage in the purchase of the ingredients used in smaller quantities.

Because of the differences in freight rates from sources of supply of various ingredients, a particular point may have a lower total freight cost than another point on certain feeds, but higher costs on a different type of feed. In a standard grow mash ration for poultry, interior points have aggregate freight costs on all ingredients of about \$2 a ton less than a plant located at Chicago. The same interior point will have only about 25 cents advantage in a standard dairy supplement. In a pig and sow supplement, the Chicago plant could have an advantage over an interior plant of 40 to 50 cents.

Large firms may procure some ingredients at lower costs through the ownership of facilities manufacturing ingredients and by-products used in animal feeds, or they may purchase ingredients in large quantities or in bulk at lower prices.

Several small plants may pool their orders for some ingredients to take advantage of carlot rates. Small mixers operated in conjunction with other enterprises frequently use trucks advantageously in hauling another item to a particular point and bringing back a feed ingredient. One example is the hauling of soybeans to a soybean mill and bringing back soybean meal; similarly, trucks hauling livestock to packing plants may bring back tankage or other ingredients.

The development by some establishments in the industry of a method in which a large mill prepares a premix for local mills to add with home-grown grain utilizes recognized advantages of each mill. Transportation costs on grain available locally are minimized, whereas some ingredients which a local mill does not use in large quantities may be obtainable in a mixture with lower total transportation cost (and perhaps ingredient cost too) than when acquired singly. The large mill is also better able to receive

minor ingredients in bulk than a small mill, with accompanying cost reductions in bags and in handling.

Manufacturing costs. The only specific cost items in feed manufacture which are disclosed by census data are manufacturing salaries and wages, fuel, and purchased electric energy. These items constituted six percent of the finished product value in 1939 and five percent in 1947, and about one-fourth of the gross margin (value of products less cost of materials, supplies, and containers) in both 1947 and 1939. Salaries and wages chargeable to manufacturing accounted for 20 percent of the gross margin in 1939 and 22.4 percent in 1947.

Output per man-hour varies widely among mills. A sample tabulation of 1947 records (not industry-wide) by the Bureau of the Census disclosed that among mills producing under 5,000 tons of feed, the output per thousand man-hours ranged from 57 to 387 tons and averaged 146 tons; for larger mills output ranged from 117 to 450 tons and averaged 313 tons per thousand man-hours. *Output at the larger mills averaged 114 percent greater than at the small mills, but the most efficient small mills had a higher output per man-hour than the average large mill.*

Labor requirements for manufacturing a ton of grow mash at three Illinois mills, as determined in short time studies, indicate the relative importance of different operations (Table 2). The monthly output averaged 200 tons at Plants A and B, and 3,000 tons at Plant C; Plant C required less than two-thirds as much labor per ton output as Plants A and B. It stored more ingredients in bulk, used conveyor belts to reduce carting and loaded the sacked feed directly from the automatic scales.

Plant B used less labor than Plant A up to the point where ingredients were mixed, due to the use of overhead bins and the handling of some ingredients in bulk. In bagging, weighing, sewing, and carting Plant A used only two-thirds as much labor as B due to better trained and more skillful personnel.

Some costs are relatively fixed. One firm operating at two-thirds of its capacity in 1948 estimated that it could double its net profit per ton by increasing its output 10 percent. Moreover, many plants operating at capacity have lower costs than other plants with a greater output not operating at capacity.

Manufacturing costs vary among individual mills because some use labor and equipment much more effectively, wage rates differ for comparable quality of labor, the amount of unused capacity varies, different kinds of feed are made, and the capital investment in buildings and equipment to handle the same output may be much greater in one plant than in another.

TABLE 2.—TIME REQUIRED TO MANUFACTURE GROW MASH, BY OPERATIONS,
BY THREE DIFFERENT FEED PLANTS^a

Operation	Plant A	Plant B	Plant C
	(man minutes per ton)		
Unloading ingredients.....	22.0	21.6	13.8
Carting ingredients.....	11.1	5.0	1.5
Opening sacks.....	2.8	1.5	.9
Emptying sacks and/or releasing ingredients.....	3.8	2.5	1.8
(Total time before mixing).....	(39.7)	(30.6)	(18.0)
Mixing ^b	10.0	10.0	10.0
Bag and weight.....	7.0	14.0	3.6
Sewing bag.....	7.0	10.0	3.6
Carting feed.....	11.0	20.0	7.0
(From mixing to stacking finished feed).....	(35.0)	(54.0)	(24.2)
Idle (Rest and unaccounted).....	12.0	12.0	12.0
Total.....	86.7	96.6	56.2

^a Data reported in unpublished thesis, University of Illinois, by T. I. McCarty.

^b Actually varied; assumed uniform to follow manufacturers' recommendations on type of equipment used.

Distribution costs. Local mills have ingredient cost advantages only on feeds using large proportions of grains and by-product feeds which are produced in surplus in the area and shipped out, and usually this gain is more than offset by lower manufacturing costs at larger mills. The ability of a local mill to compete with larger mills therefore depends largely upon the relative costs in getting the finished feed to the farmer.

A wide variation among feed mill establishments in distribution costs is suggested by the fact that in 1947 the number of employees *not* engaged in manufacturing operations averaged 27 percent of all employees in the United States, but ranged from 52 percent in Illinois and 35 percent in Iowa down to only 13 percent in Alabama and New Mexico.

Census data show that all salaries and wages not directly allocated to manufacturing accounted for 35 percent of the total salaries and wages paid in the prepared feeds industry in both 1939 and 1947, and for 10.7 and 12.4 percent, respectively, of the gross margin in each of these years. Most of these salaries and wages not chargeable to manufacturing are for distribution (in 1939 about two-thirds of it was so designated, and to this amount must be added a significant share of officers' salaries). Other distribution costs such as transportation, storage, and advertising not disclosed by the census tend to increase as the proportion of nonmanufacturing workers increases.

Many local mills which sell direct to farmers may offset higher manufacturing costs with the amount it requires a distant mill to transport finished feed to it. Local mills which must have the major share of their ingredients shipped in would not have this transportation advantage if the distant mill was located between the local mill and the cheapest source of supply and had favorable milling-in-transit privileges. Rail rates on

finished feed from Chicago to interior points approximately 150 miles distant exceed four dollars a ton, but the actual cost might be less either because of in-transit rates or by shipping by truck.

A recent study by the Farm Credit Administration, United States Department of Agriculture¹ reports that five mills distributing direct to farms had feed distribution costs excluding transportation which averaged \$2.28 a ton less than the distribution expense incurred by 13 local retail feed stores and the mill which supplied them. In four cases the double handling cost at least \$3.50 a ton more than the average of the local mills, whereas in two other instances it was only a few cents higher. This analysis included mills whose output ranged from 7,479 to 102,438 tons; the author recognizes that results cannot be considered conclusive because of the small number of firms, and the exclusion of very large mill operations. He states that "large scale operation appears to enable the mills to reduce expense per ton for general and administrative purposes more than those for manufacturing."

In general it appears that many local mills possess some economies in distribution which can offset, at least partially, other costs which are higher.

Other factors. The competitive position and ability to continue operation of different size feed mills cannot be determined by an analysis of the feed enterprise alone. Both large and small mills have integrated their operations horizontally and vertically. Even if feed operations by themselves in a given year do not show any profit, the over-all operations of some firms may have been more profitable than they would have been had there been no feed enterprise.

Small mills operated in conjunction with other enterprises frequently have an opportunity to use their existing labor supply, physical facilities, and management more fully than would otherwise be possible. In this connection their problem is to ascertain what complementary enterprises, feed or otherwise, utilize their resources most profitably and contribute to the volume of their other business.

The existence of large and small feed manufacturing firms competing in the same area throughout much of the United States suggests that in few situations does a particular size mill have all the advantages in the manufacture and sale of all types of feed. An efficiently operated mill located in an area where a large share of the ingredients are obtainable nearby, and which likewise has a ready market for its output adjacent to the plant, appears to be in a strong competitive position. Its chief problems will be that of maintaining a satisfactory quality of product and of

¹ Rickey, Lacey F., Bulletin 56, "Operating Costs of Selected Cooperative Feed Mills and Distributors."

having its operations sufficiently flexible to meet changes in demand for feed in its area.

R. J. MUTTI

LEGAL ASPECTS OF GROUND WATER USAGE IN ILLINOIS

Farmers and other residents of Illinois are not in the habit of thinking of ground water as a limited natural resource. But within the past few decades several circumstances have combined to create local concern in some areas of the state and to cause the state government itself to institute a study of this resource and the laws which affect its use.* Chief among the circumstances have been a lowered water table, unwise pumping practices, increased domestic and industrial use, and the mounting feasibility and possibility of widespread irrigation. In its report on ground water the Illinois Legislative Council stated:

During the earlier years of our national history very little attention was paid to the use of water for the reason that there appeared to be plenty for all users. During recent years, however, the heavy demands on water supplies — especially subsurface or ground water — have brought about localized difficulties in maintaining an adequate supply for present and future needs, making the question of conservation of sufficient economic importance to warrant discussion of state control and administration.

In a recent report a subcommittee on supplemental irrigation of the North Central Regional Land Tenure Committee stated that:

Supplemental irrigation is not an entirely new thing in the North Central Region. A few farmers, primarily the growers of fruit and truck crops, have been irrigating for years. Since the war, however, there has been a surge of interest in the use and possibilities of supplemental irrigation, particularly in some parts of the region.

Comprehensive statistics are lacking; but in Wisconsin, for instance, a reconnaissance survey showed that several hundred farmers in widely distributed counties were irrigating nearly all their farm crops in 1948. Major emphasis on these farms was placed on the irrigation of fruit, truck crops and potatoes. The county agents in Wisconsin report widespread farmer interest and intentions to install irrigation equipment. During the past two years, special sessions on irrigation and water law at the annual Farm and Home Weeks have evoked more than usual response.

A somewhat similar situation prevails in Michigan where the estimated number of farm irrigation systems increased from 255 in September 1946 to 1300 in January 1950. The acreage irrigated in Michigan increased from around 2500 acres in 1945 to approximately 50,000 acres in 1949. Most of this irrigation is found on intensively farmed lands, particularly on lands growing potatoes, truck and fruit crops. Supplemental irrigation, however, is used to some extent in dry seasons on pasture lands and field crops. It also is used by

* Illinois Legislative Council Publication 88, "Control of Ground Water," May, 1948.

many muck land farmers for frost prevention and wind erosion control purposes.

Irrigation in the Midwest may be distinguished from the irrigation practiced in western states on several counts. In the first place, it supplements a relatively humid climate and, except in unusually dry years, is responsible for increased yields rather than for the entire crop. In the majority of installations, water is pumped through a sprinkler system rather than being distributed through ditches by gravity, and the lightweight portable pipes are moved from field to field for each application of water. A water supply is relatively easy to develop, either from surface or underground supplies. Because dams and elaborate irrigation projects are not required, large areas are potentially irrigable through private initiative.

There seems to be ample evidence that Illinois water resources, both ground and surface, will be used more heavily in the future than they have been in the past and that the rate of increased usage may be accelerated. This will pose economic problems for both private and public users and will pose governmental and control problems for those charged with protecting the public interest in water resources. In view of this an examination of the laws and rules governing present rights in the use of ground water is apropos.

English Common Law Rule Adopted by Illinois Courts

Legal rights in water have been built up through centuries of usage and litigation. Like many of our basic legal rules regarding property the rule on ground water is of English common law origin. There is no comprehensive statute in Illinois controlling the use of either ground or surface waters, and the common law rule has been permitted to develop with very little modification.

The essence of this rule is that the owner of land owns all the water underlying his realty. This accords with the concept, so frequently expressed, that the surface owner possesses a column of earth to the center of the earth and a column of air to the sky. Interestingly enough, England has adopted statutory modifications of the common law rule, but Illinois has not.* Under this rule the owner of the underground water supply may use it as he sees fit, even if this means completely exhausting the supply. Hence the water from an underground source underlying several ownerships will go in greatest proportion to the owner who can pump it out most rapidly. This situation is summarized very well in the Illinois Legislative Council Ground Water Report:

The legal status of ground water in Illinois has already been characterized as a situation in which the landowner has an absolute right in the water underlying his estate. That is, water which results from natural and ordinary percolation through the soil becomes part of the land insofar as the Illinois

* *Edwards v. Haeger*, 180 Ill. 99 (1899).

courts are concerned. If the owner has not given away any of his rights to such water, he may draw on it as he sees fit for his own purposes, even though the necessary result be an interference with the source of supply of springs and wells on adjoining property. In summary, at least where the owner of the land is not motivated by mere malice, he need not use the ground water underlying his property in such a way as to evidence a regard for the rights of others. Of course, this situation could be altered by statute within constitutional limits. However, there has not been to date any statutory change in the basic law and there are, indeed, few existing Illinois statutes which bear in any way on ground water problems. This may be attributed in part to the statutory law being somewhat behind current economic developments. In part, too, the reason may be the difficult legal problems that are involved in statutory attempts to upset existing doctrines as to the rights of property owners in water which underlies their lands.

Something of the broad-sweeping character of the Illinois rule may be gathered from an opinion of the Attorney General rendered earlier this year to the State Water Resources and Flood Control Board.* The Attorney General had been asked for his opinion as to whether the board had the right to prevent or halt new extraction of water by an industry in a hypothetical area where the water supply was already known to be critical and also whether the board had the right to restrict the extraction of water by any parties. These questions were asked with regard to a community which was assumed to be relying on underground water supplies for both general municipal use and industry. Moreover, it was stated that in this case the water was hardly adequate for another twenty years; that if certain new uses were permitted five years would see the approach of a time when users would be unable to secure the necessary quantities of water except at prohibitive rates; and that no additional water supply was available except through the costly process of bringing in surface water from a stream some little distance away.

The Attorney General, in denying that the board had power to act, was largely governed by the limited statutory authority vested in the board. It is, however, also significant to note that he was of the impression that the right to "water underneath the soil is part of the land itself and belongs absolutely to the owner of the land. . . ." From this it would seem to follow that a statute to subject these rights to state control would either need to provide for compensation to the owners, as in cases of a property taking by eminent domain, or if no compensation were accorded owners, would need to be recognized by the court as a lawful exercise by the state of its paramount police power.

Apparently the Illinois courts do not adhere to this rule with regard to streams or flowing water, except that a "riparian" owner may use all the water in a stream if such use is necessary for "ordinary" purposes (domestic use and watering livestock).¹ There is authority to the effect that any usage beyond the ordinary — irrigation or manufacturing, for example — must be a reasonable use and must not impair the ability of lower riparian owners to make an ordinary use of the stream.² However,

* Letter opinion of Attorney General George F. Barrett, *Waters: Powers of State Water Resources and Flood Control Board* (March 2, 1948).

¹ Evans v. Merriweather, 3 Ill. 492, 38 Am. Dec. 106.

² Rudd v. Williams, 43 Ill. 385.

if the water in question is surface water an owner can impound and use all of it regardless of whether it is diffused water or flows in natural depressions.

It is obvious that under present law any extensive new use such as irrigation, could seriously impair existing usage, regardless of the value of the present usage. This points to early consideration by the state of a statutory water law establishing needed controls and authority over both ground and surface waters, for the protection of individual users and of the public. Many states have already taken this step.

Present Illinois Statutes

The nature and effect of existing Illinois statutory law affecting water rights is very well summarized in the Report of the Legislative Council:

While a number of Illinois statutes have some relation to water generally and to ground water particularly, they do not provide for centralized control over the water resources of the state in any one agency. Questions relating to water from a health point of view are to be answered by consulting scattered references in the cities and villages code, the criminal code, and the statutes relating to the Department of Public Health, Ohio River Valley Sanitation Compact, local sanitary districts, and the State Sanitary Water Board. Matters relating to the conservation of water supplies can be found in statutes affecting the Department of Conservation, Department of Public Works and Buildings, Illinois Post-War Planning Commission, and River Conservancy Districts.

Other aspects of the water supply are treated in statutes concerned with the Board of Natural Resources and Conservation, the Board of Water Resources Advisors, the Illinois State Geological Survey, the Illinois State Water Survey, the Interstate Flood Relief and Prevention Commission, and the Department of Mines and Minerals. From time to time, moreover, temporary commissions have been created to study flooding problems or other aspects of the more general water problem. It may, moreover, be noted that outside of questions relating to the public health and navigation definite statutory control of water on the part of any of the bodies mentioned may be regarded as being of little general significance.

The agencies referred to above, as well presumably as some which have not been specifically enumerated, are by statute granted fact-finding and investigating power but are not provided with general controls over water use disassociated from navigation of existing waterways, assurance of a pure public water supply, and avoidance of underground pollution. This, however, is not to be construed as meaning that the legislature has ignored water supply problems generally. The point is, rather, that it has merely not proceeded any great distance in the imposition of controls. The broadest step in this direction was taken in 1945.

It was in that year that the Illinois General Assembly created the State Water Resources and Flood Control Board.* The board consists of five directors of the Governor's code departments, with the Governor designating

* *Ill. Rev. Stat.*, 1947, ch. 127, sec. 200.1ff.

the one to serve as chairman. The departments involved are: Agriculture, Conservation, Health, Public Works and Buildings, and Registration and Education. The technical secretary of the board is provided through the Department of Public Works and Buildings.

There is in the statute an enumeration of the powers and duties of the board. In general, these confer authority to study, investigate, and recommend legislation with regard to means by which the maximum beneficial use may be made of the waters of the state and means for conserving water supplies, taking into account problems involved in navigation, flood control, river-flow control, reclamation, drainage, irrigation, development of electrical energy, municipal use of water supplies, etc. The board is, moreover, authorized to conduct hearings and to issue subpoenas and administer oaths in connection with such hearings.

The one specific power of the board is perhaps noteworthy. This is a grant of authority to arbitrate and provide means for the equitable reconciliation and adjustment of conflicting claims to water use. In the opinion already referred to, the Attorney General held that this language did not include authority to enforce findings. The board can only endeavor to bring the parties in conflict to an agreement or can submit recommendations for legislative action.

Actually, the provision of the act which is probably of most general significance is the declaration of policy with which the enactment commences. This is deserving of quotation as a reflection of what may be regarded as current concepts not necessarily implemented by legal definitions of rights:

"It is hereby declared that the general welfare of the people of this State requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare. The right to water or to the use or flow of water in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water."

The water which the General Assembly was referring to in the above policy declaration is not defined, but it is assumed to include ground water as well as surface water supplies.

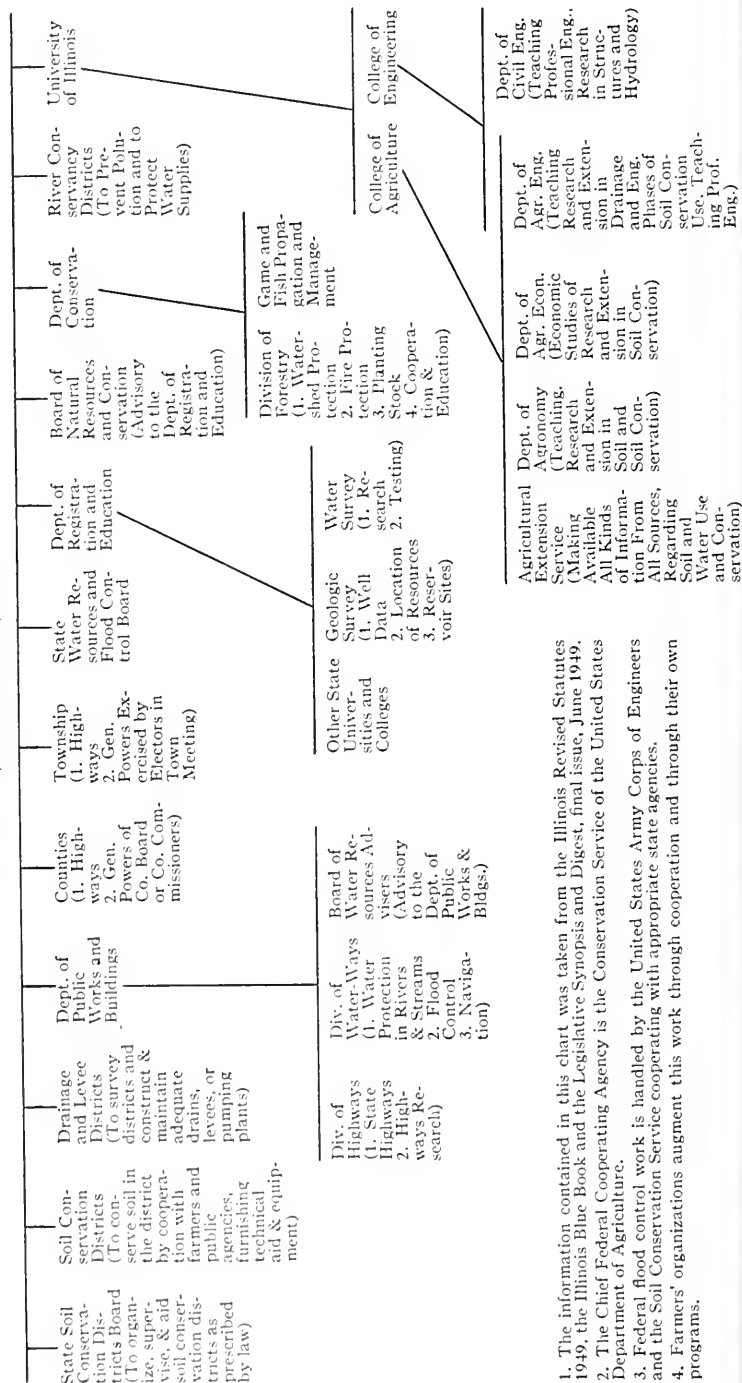
Illinois agencies concerned with water, their general functions and their relationship to each other are illustrated in Chart A.

Summary of a Modern Ground Water Statute

Borrowing again from the Legislative Council report, the provisions which should be included in a statute may be summarized as follows:

The first step which would appear necessary if ground water legislation is drawn would be a definition — administrative or statutory — of areas which are faced, presently or ultimately, with ground water difficulties. This could be accompanied by grants of authority to retain water in such areas, restrict new industrial users, initiate water-saving practices, locate additional sources

CHART A
ILLINOIS AGENCIES CONCERNED WITH SOIL AND WATER CONSERVATION
ITS STUDY, MANAGEMENT, AND USE



of supply, and, if practicable, carry out plans for recharging the depleted water bed. There would need to be included provision for distributing the costs of operations among the water users of the area.

It has been suggested by an eminent water authority that a number of specific features should be considered in any water conservation legislation. Largely in that writer's own language, these are:

1. A declaration that all waters (both surface and ground waters) are public property, available for appropriation for beneficial use, subject to existing rights.

2. The law should be administered by a state agency whose determination of water rights would be subject to court review.

3. Water for domestic and stock use and irrigation of small home gardens should be specifically exempted from regulation.

4. Beneficial use would be "the basis, the measure, and the limit" of the right ground water use, and the standards guiding a decision as to whether a given use is beneficial would be subject to change as methods of utilizing ground water become more efficient.

5. It should recognize the fact that water cannot be withdrawn from a well without lowering the head in nearby wells penetrating the same water-bearing formation, and should provide that a reasonable lowering in head by a junior appropriation would not constitute a ground for action by a senior.

6. The law would not necessarily be applied over the whole state at once but might be made applicable only to areas of relatively uniform ground water conditions where the supply is in danger of depletion, at the discretion of the state authority or at the request of a certain proportion of water users in the area.*

Other writers would suggest the addition of a provision, similar to a Kansas statute, which states priorities in claims on water in the following order: domestic, municipal, irrigation, industrial, recreational, and water power. There could, obviously, be much controversy over almost any statement of priorities that is attempted.

H. W. HANNAH

*C. L. McGuinness, "Legal Control of Use of Ground Water," *Water Works Engineering* (May 2, 1945).

Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. ⁹ Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. ¹⁰ Federal Reserve Bulletin of Federal Reserve Board. ¹¹ Preliminary estimate. ¹² Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹³ Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.



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NATURAL HISTORY SURVEY LIFE

CHAMPAIGN

TABLE A.—INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production ¹⁰
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period.....	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-39	
1934.....	93	86	76	96	79	68	71	80	68	75
1935.....	99	104	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	306	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	247	275	207	383	392	189	303	351	192
1949.....	192	218	218	200	343	346	176	308	325	176
1949 May ..	193	226	221	202	289	336	166	303	313	174
June	192	222	222	201	306	328	163	301	316	169
July.....	190	219	217	200	326	366	183	300	313	161
Aug.....	190	214	218	199	363	293	147	301	323	170
Sept.....	191	215	224	198	392	287	145	302	335	174
Oct.....	189	210	213	196	471	608	310	299	321	166
Nov.....	188	206	207	196	457	393	200	302	314	173
Dec.....	188	204	202	196	349	325	166	307	329	179
1950 Jan.....	188	201	201	199	337	379	190	314	329	183
Feb.....	190	209	209	198	240	307	155	320	330	180
Mar.....	190	210	209	200	247	325	163	327	333	187
Apr.....	190	210	213	200	232	258	129	319	337	190
May.....	193	217	226	203	265	332	163	317	...	195

TABLE B.—PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			July 1949	Current months, 1950		
	1935-39	1948	1949		May	June	July
Corn, bu.....	\$.66	\$1.89	\$1.17	\$1.25	\$1.35	\$1.35	\$1.42
Oats, bu.....	.31	.94	.64	.57	.80	.81	.73
Wheat, bu.....	.86	2.23	1.95	1.85	2.11	1.94	2.04
Barley, bu.....	.62	1.58	1.07	.90	1.17	1.17	1.26
Soybeans, bu.....	.90	3.20	2.19	2.32	2.76	2.84	2.99
Hogs, cwt.....	8.52	23.71	18.58	18.40	18.60	17.60	20.80
Beef cattle, cwt.....	7.88	24.77	21.62	22.00	24.00	25.80	26.60
Lambs, cwt.....	8.36	23.41	23.36	23.30	24.60	25.00	24.50
Milk cows, head.....	58.00	194.17	198.33	190.00	215.00	220.00	210.00
Veal calves, cwt.....	8.66	26.29	25.50	23.80	27.20	26.70	28.70
Sheep, cwt.....	3.58	8.93	8.70	8.00	10.50	9.50	8.40
Butterfat, lb.....	.27	.73	.58	.56	.58	.57	.56
Milk, cwt.....	1.68	4.48	3.48	3.10	3.15	3.05	3.15
Eggs, doz.....	.19	.42	.40	.38	.26	.25	.27
Chickens, lb.....	.15	.30	.27	.25	.22	.21	.23
Wool, lb.....	.25	.42	.42	.43	.46	.50	.50
Apples, bu.....	1.08	2.33	2.38	2.00	2.50	2.50	2.75
Hay, ton ¹³	9.39	20.64	22.68	19.50	21.70	20.20	18.70

¹²⁻¹³ For sources of data in tables see preceding page.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. H. P. Rusk, Director. Acts approved by Congress May 8 and June 30, 1914

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS

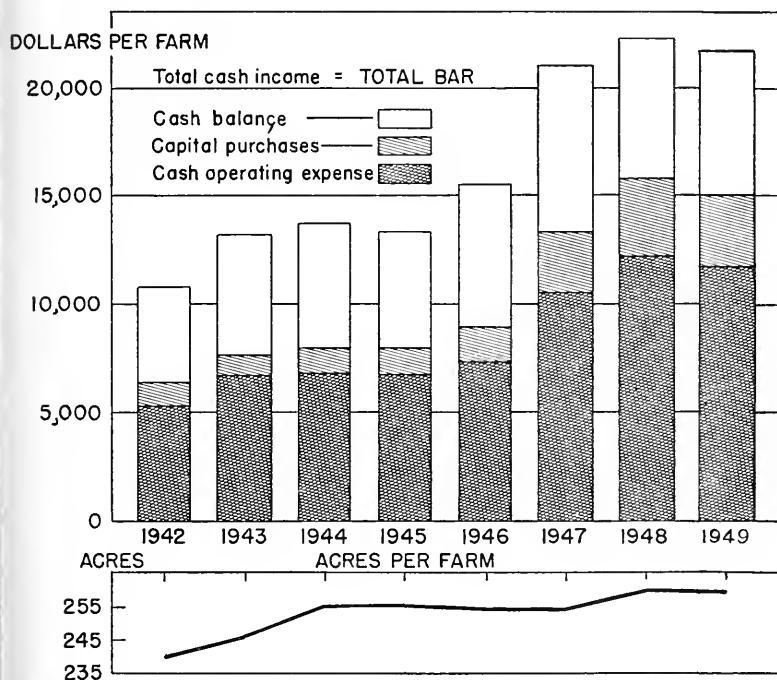
College of Agriculture · University of Illinois · Department of Agricultural Economics

G. J. Jordan, Editor

September, 1950

Number 184

Summary of Annual Farm Business Reports of 2,674 Illinois Farms For the Year 1949



Total Cash Income, Capital Purchases, Cash Operating Expenses, and Cash Balance for Illinois Farms, 1942-1949. Averages Obtained by Weighting Area Averages by Number of Census Farms.

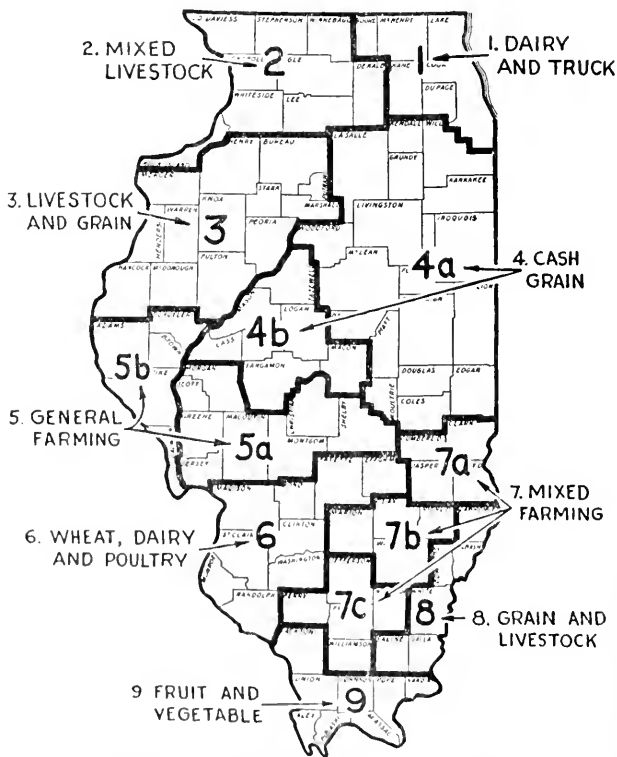
Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

FOREWORD

Economic developments growing out of the unstable international conditions, changes in domestic agricultural policies, and technical progress in production may make changes desirable in plans of individual farms for the coming year and for years ahead. The decisions to make such changes can be made most readily by farmers who are well informed. The wisdom of their decisions will depend in large measure upon how well they are able to put their farms in good balance.

The analysis of farm income and expenses presented in this report provides practical information planned to help make decisions on a sound basis. Every farmer needs accurate records on his own business in order to make use of such data. Every farmer needs to keep well informed about his business. Teachers, farm advisers, and all who assist in planning improved systems of farming should base recommendations upon sound information.

H. C. M. CASE



THE NINE MAJOR TYPE-OF-FARMING
AREAS IN ILLINOIS

SUMMARY OF FARM BUSINESS RECORDS ON 2,674 FARMS IN ILLINOIS FOR 1949¹

A. G. MUELLER, F. J. REISS and J. B. CUNNINGHAM

Net cash income an acre. The 1949 average net cash income an acre for accounting farms was just slightly below the 1948 income figure. The net cash income of \$17.45 in 1949 may be compared with the income of \$17.76 in 1948 and \$23.28 in 1947.

The average net cash income an acre for Illinois accounting farms from 1935 to 1949 was as follows:

1935.....\$5.14	1940.....\$ 6.82	1945.....\$15.35
1936..... 7.40	1941..... 9.91	1946..... 19.63
1937..... 5.33	1942..... 14.99	1947..... 23.28
1938..... 5.25	1943..... 18.55	1948..... 17.76
1939..... 5.40	1944..... 17.30	1949..... 17.45

The net cash income an acre was computed by subtracting the value of unpaid family labor from the net cash balance for the year and dividing that difference by the number of acres in the farm. State averages were calculated by weighting farming type area averages by the acres of land in farms (census) in each area.

These returns do not include inventory changes, increase in value of capital items, or the money value of farm products consumed from the farm. The net cash income an acre is one of the best measures for comparing incomes of groups of farms over a period of years, or for contrasting the level of income for different areas of the state. During any period of years, earnings fluctuate more widely from year to year when inventory changes are included since inventory changes reflect the quantities of livestock and grain on hand January 1 and the inventory price of these products, as well as the increase or decrease in remaining value of capital items.

Effect of price levels on earnings. In 1949 the ratio of prices received by Illinois farmers to prices paid for supplies was 99 percent of the 1910-1914 base. This ratio in 1948 was 110 percent of the 1910-1914 ratio. (The revised index of prices paid by farmers which includes hired labor has been used for these comparisons.)

An index of prices received by Illinois farmers decreased from 311 in 1948 to 247 in 1949 (1910-14 = 100). For the same years an index of prices paid by farmers in the United States decreased from 259 to 250. Farm prices declined more rapidly in 1949 than farming costs.

¹ Averages in this report include 2,136 Farm Bureau Farm Management records and 538 extension project records. A total of 2,465 Farm Bureau Farm Management records and 629 extension project records were summarized in 1949.

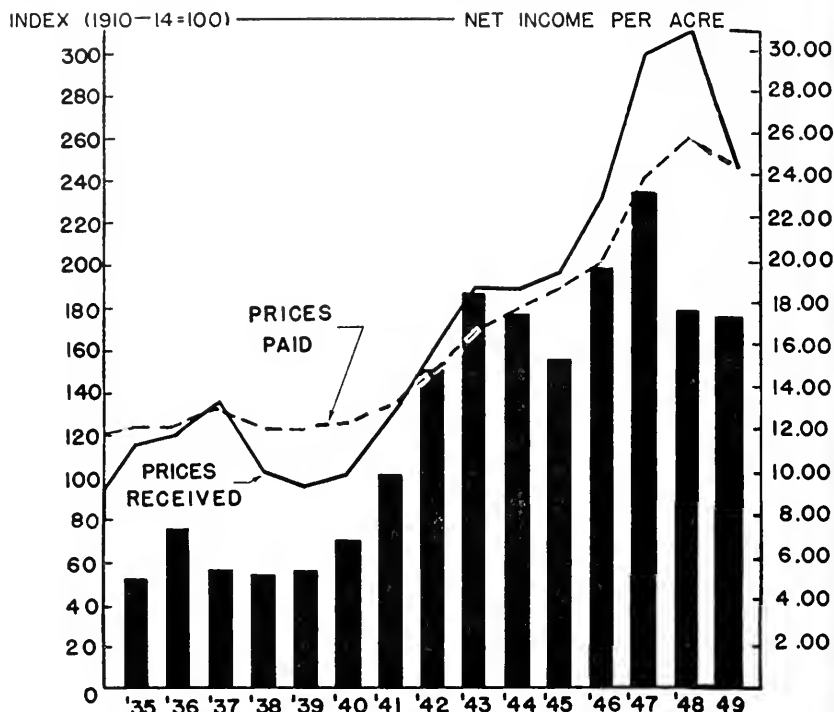


FIG. 1.—AVERAGE NET CASH INCOME AN ACRE (UNPAID LABOR DEDUCTED) ON ILLINOIS ACCOUNTING FARMS, PRICES PAID BY FARMERS IN THE UNITED STATES, AND PRICES RECEIVED BY ILLINOIS FARMERS, 1935-1949

Accounting farms represent better than average conditions. Previous studies indicate that accounting farms are much larger than the average size of farms for the state. Also, these farms are, as a group, located on better quality soils. Hence, any per farm or per acre averages in this report should not be interpreted as representative for all farms in the state. Figures on costs and earnings per farm will be much higher because of the greater size of farm and the effect of quality of soil on earnings.

Data presented in Tables 1 through 17 are useful in showing trends in income, expenses and investments over a period of years, since the farms included in accounting projects remain fairly constant from one year to the next.

Value of farm products used in the household. In the farm business reports, which have been published separately, and in the tables at the back of this report, the farm values of meat, milk, eggs and other farm products

used in the household were included as a source of income. These products have also been included in comparing the 1943-1949 records in Table 1.

Depreciation and maintenance expenses for the residence are omitted on all owner-operated farms. Thus, the accounting for farm buildings agrees with income tax rulings.

Cash income per farm. The average cash income and expenditures on Illinois farms were somewhat lower than the record high income and expenditures in 1948 (Table 1). Total cash income in 1949 decreased by 3 percent from 1948. This decrease in cash income was matched by an equal decrease in cash expenditures in 1949, resulting in a net cash balance of almost the same as the previous year.

The cash balance of \$6,445 per farm in 1949 is about the same as the cash balance figures in 1946 and 1948, but \$1,331 below the high earning figure in 1947. The continued high cash balance figure in 1949, in spite of a decline of 21 percent in Illinois farm prices from 1948, probably can be credited to sales of farm products carried over from the previous year and to lower cash expenditures on Illinois farms. In the grain farming areas of the state, government price programs may have resulted in the disposal of grain crops at prices above the average farm market prices.

Income tax payments, debt and interest payments must be deducted from the cash balance per farm to determine the amount available for farm family living and savings. Also, on a large number of farms, this

TABLE 1.—SELECTED ITEMS OF INCOME AND EXPENSE ON ILLINOIS ACCOUNTING FARMS, 1943-1949*

Item	1943	1944	1945	1946	1947	1948	1949
Acres per farm.....	246	255	255	254	254	259	261
Cash income per farm.....	\$13 204	\$13 748	\$13 376	\$15 544	\$21 054	\$22 157	\$21 560
Cash operating expense.....	6 691	6 831	6 779	7 421	10 566	12 197	11 755
Capital purchases.....	857	1 167	1 229	1 659	2 712	3 516	3 359
Cash expenditures per farm.....	7 548	7 998	8 008	9 080	13 278	15 713	15 114
Cash balance.....	\$ 5 656	\$ 5 750	\$ 5 368	\$ 6 464	\$ 7 776	\$ 6 444	\$ 6 445
Inventory increase.....	778	-274	190	2 500	4 595	1 976	85
Farm products used in household..	397	405	413	456	485	492	408
Cash balance plus inventory increase and farm products used in household.....	\$ 6 831	\$ 5 881	\$ 5 971	\$ 9 420	\$12 856	\$ 8 912	\$ 6 938
Unpaid labor.....	1 374	1 634	1 696	1 783	2 085	2 078	2 116
Net farm earnings.....	\$ 5 457	\$ 4 247	\$ 4 275	\$ 7 637	\$10 771	\$ 6 834	\$ 4 822
Gross receipts per acre ^b	\$41.53	\$40.27	\$41.44	\$53.34	\$79.65	\$64.12	\$56.04
Total expense per acre ^c	19.35	23.62	24.61	23.13	37.59	37.76	37.53
Net receipts per acre ^b	\$22.18	\$16.65	\$16.83	\$30.21	\$42.06	\$26.36	\$18.51
Net income per acre (cash basis) ^d ..	18.55	17.30	15.35	19.63	23.28	17.76	17.45

* These state averages were obtained by weighting area averages. The last item, net income per acre (cash basis), was weighted by the acres of land in farms in each area; all other items were weighted by the number of census farms in each area.

^b Receipts include inventory changes and farm products used in household.

^c Total expense includes unpaid labor charge.

^d Cash balance less unpaid labor.

cash income must be divided between the landlord and operator or between more than one farm family where profit sharing agreements are in effect.

Cash farm business expenditures. Cash expenditures continued at a high level on Illinois farms in 1949. Total cash expenditures per farm were \$15,114 in 1949, \$599 less than in 1948, but more than double the average cash expenditures of \$7,001 per farm during the years 1941 through 1945.

Continued high prices paid for supplies and services in 1949 as well as a continued high level of expenditures for replacement and addition of capital equipment on Illinois farms have contributed to high expenditures in 1949. During the past few years, the proportion of cash expenditures to total cash income has been increasing. This has been a result of more mechanization of farms and the increasing dependence of farming operations on purchased supplies and services. As this trend continues in the future, successful farm operations will be dependent upon a stable and high-level cash income.

Inventory increases. Inventory values increased only \$85 on Illinois farms in 1949. This is in contrast with an increase of \$4,595 in 1947 and \$1,976 in 1948 (Table 1). With inventory changes included, net earnings per farm declined to \$4,822 in 1949, a decrease of \$2,012 or 30 percent from the earnings of \$6,834 in 1948. On the cash basis, net earnings per farm did not decline from 1948 to 1949. The contrast in the change of net earnings on the inventory and on the cash basis may be explained in part by the added sales of inventory stocks of products carried over from 1948 and sold in 1949.

The increase of \$85 in inventories on Illinois farms for 1949, even though farm prices declined from the beginning to the end of the year, needs explanation. An inventory increase indicates the combined value of livestock, grains, improvements, and machinery was larger at the end of the year than at the beginning. Within a single year the beginning and ending inventories are for exactly the same farms. This may not be the case where comparisons are made from one year to the next. In 1949, Illinois farmers made new purchases of capital items, in terms of dollars, greatly in excess of depreciation recovered. Thus, the capital situation of Illinois farms was improved and this increase in capital items offset a decline in inventory values of farm products on Illinois farms.

Prices of farm products. Indicative of what happened to farm prices in 1949 is Figure 2 which gives the average monthly price of corn and hogs from January 1949 through July 1950. Average Illinois corn prices fell below \$1.00 a bushel in November 1949 for the first time

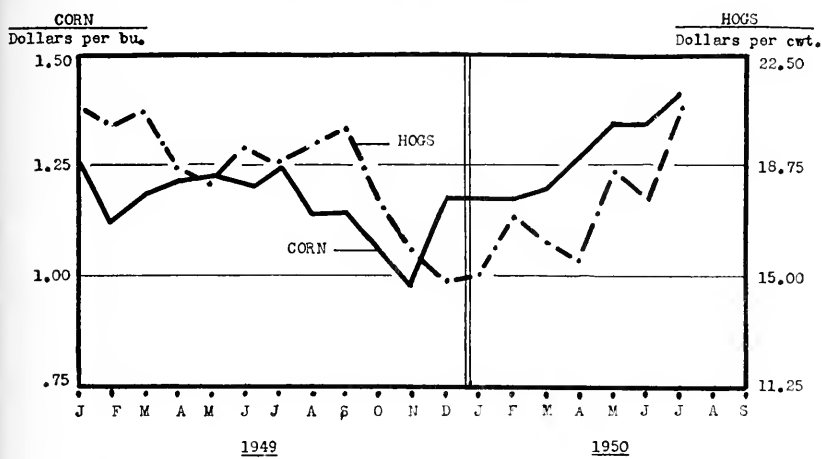


FIG. 2. — AVERAGE MONTHLY ILLINOIS FARM PRICES OF CORN AND HOGS FOR 1949 THROUGH JULY, 1950

since price controls were lifted. Hog prices fell below \$15.00 a hundred-weight in December 1949, also the lowest price since price controls were lifted in 1946. However, prices have recovered in recent months to levels above the 1949 prices.

Crop yields in Illinois. Crop yields in 1949 were 25 percent above the 1935-1944 average but 5 percent below the record high crop yields in 1948 (see Figure 3). All counties in the state had yields well above the 1935-1944 average with 12 counties in the southern and south central parts of the state recording yields over 50 percent above the ten-year average.

The state average corn yield of 56 bushels per acre was 5 bushels below the record high yield of 61 bushels in 1948 but still the third highest yield on record. Damage by corn borer and lodging and dropping of ears during fall windstorms reduced yields somewhat.

Favorable weather conditions in 1949 for winter wheat and soybeans resulted in new record high yields for these crops. The soybean yield of 26 bushels per acre exceeded the previous high yield of 24.5 bushels per acre in 1939. The wheat yield averaged 24.5 bushels per acre, exceeding the 1948 yield by only one-half bushel. Oats yields were above the ten-year average but not as high as the yields of the previous two years.

Variations in net cash income an acre. The 1949 net cash income an acre varied from \$4.93 in Area 7 to \$22.79 in Area 1 (Table 2). Net cash incomes an acre were higher in 1949 than in 1948 in Area 1, Area 7 and Area 8. The other areas showed decreases. The marked increase in

TABLE 2.—NET INCOME AN ACRE (CASH BASIS) FOR ILLINOIS ACCOUNTING FARMS BY FARMING-TYPE AREAS FOR THE PERIODS 1925-1929, 1930-1934, 1935-1939, 1940-1944, AND 1945-1949 AND FOR THE YEARS 1948, 1949^a

Farming-type areas	1925-1929	1930-1934	1935-1939	1940-1944	1945-1949	1948	1949
Area 1, Chicago Dairy.....	\$9.59	\$5.25	\$5.61	\$13.72	\$20.45	\$18.82	\$22.79
Area 2, Northwestern Mixed Livestock.....	7.94	4.92	7.23	16.23	21.79	20.36	18.40
Area 3, Western Livestock and Grain.....	9.05	4.86	6.99	16.93	24.16	22.31	21.56
Area 4, East-Central Cash Grain.....	8.91	4.46	7.15	18.15	24.25	22.76	22.21
Area 5, West-Central General Farming.....	6.35	3.23	4.62	11.58	18.22	19.14	18.82
Area 6, St. Louis Dairy and Wheat.....	3.26	2.03	3.32	5.79	7.77	7.08	6.68
Area 7, South-Central Mixed Farming.....	2.21	.91	1.96	3.47	4.57	4.28	4.93
Area 8, Wabash Valley Grain and Livestock.....	4.57	1.73	3.96	6.58	7.89	7.49	7.66
State Average (weighted by acres in each area)	\$7.13	\$3.74	\$5.70	\$13.51	\$17.68	\$17.76	\$17.45

^a Includes records of the Farm Bureau Farm Management Service for 1938-1949.

cash income per acre in farming type Area 1 (Chicago dairy area) does not represent conditions on all farms in the area. The records summarized in this area include a number of feeder cattle farms. Purchase and sale transactions within the same year on these feeder cattle farms resulted in a high net cash income. With inventory changes included, this high income was not realized.

Variations in net income an acre with inventory change included. When inventory changes were included, the average net income an acre for the state was 30 percent lower in 1949 than in 1948 (Table 3). This decrease of 30 percent with inventories included is in contrast with earnings that remained constant on the cash basis. The decline in inventory increase in 1949 resulted in this difference.

The range in net income per acre with inventory change included was from \$22.37 in Area 4 to \$6.02 in Area 7.

TABLE 3.—NET INCOME AN ACRE (INVENTORY BASIS) FOR ILLINOIS ACCOUNTING FARMS BY FARMING-TYPE AREAS FOR THE PERIODS 1925-1929, 1930-1934, 1935-1939, 1940-1944, AND 1945-1949 AND FOR THE YEARS 1948, 1949^a

Farming-type areas	1925-1929	1930-1934	1935-1939	1940-1944	1945-1949	1948	1949
Area 1, Chicago Dairy.....	\$11.04	\$2.64	\$10.03	\$20.54	\$28.89	\$24.96	\$20.29
Area 2, Northwestern Mixed Livestock.....	15.11	2.70	11.45	22.23	33.22	32.40	20.81
Area 3, Western Livestock and Grain.....	10.24	2.84	11.43	22.53	32.38	29.55	20.79
Area 4, East-Central Cash Grain.....	10.30	2.76	11.05	21.81	32.64	30.51	22.37
Area 5, West-Central General Farming.....	7.69	1.99	7.92	15.38	24.26	26.19	17.96
Area 6, St. Louis Dairy and Wheat.....	5.41	.92	5.55	8.37	13.01	16.39	9.04
Area 7, South-Central Mixed Farming.....	3.34	.55	3.76	5.46	8.80	10.13	6.02
Area 8, Wabash Valley Grain and Livestock.....	5.34	1.20	5.22	9.21	13.97	12.67	8.87
State Average (weighted by acres in each area).....	\$ 8.59	\$2.20	\$ 9.23	\$17.56	\$25.97	\$25.55	\$17.77

^a Includes records of the Farm Bureau Farm Management Service for 1938-1949.

Distribution of Inputs Under Five Systems of Farming¹

Detailed cost records kept on 39 farms in western Illinois in 1948 provided the data included in Table 4 (while these data are for 1948, they are quite comparable to 1949 conditions). The 39 farms were selected to represent five well-defined systems of farming in the area. The systems represented were grain, hog, feeder cattle-hog, beef cattle-hog and dairy-hog farming.

Inputs or costs as used here include cash expenses and fair cash values for non-cash items entering into the cost of operating farms. These inputs were classified under four headings; land, labor, operating capital and management. The land input includes land taxes and four percent interest on the current value of land. The labor input includes cash cost of hired labor and the value of farm products to hired labor, the proportional share of labor included in hired custom jobs and operator and family labor valued at the average hourly rate for hired men on the 39 farms.

Operating capital inputs include cash, interest and depreciation charges

¹This section is based on data taken from "Inputs and Returns as Related to Systems of Farming in Western Illinois, 1948" (AE2750) by R. H. Wilcox, A. C. Ruwe and R. C. Ross.

TABLE 4.—INPUTS PER 100 ACRES BY SYSTEMS OF FARMING
IN WESTERN ILLINOIS, 1948

Item	Grain	Hog	Feeder cattle- hog	Beef cattle- hog	Dairy- hog
Number of farms.....	8	8	8	7	8
Soil rating on all land.....	2.8	2.6	2.8	4.8	4.9
LAND					
Taxes.....	\$ 137	\$ 219	\$ 225	\$ 152	\$ 222
Interest on investment at 4 percent....	767	809	767	542	533
TOTAL LAND CHARGE.....	\$ 904	\$1 028	\$ 992	\$ 694	\$ 755
LABOR					
Crops.....	\$ 279	\$ 283	\$ 366	\$ 266	\$ 391
Livestock.....	268	533	523	425	1 348
General maintenance.....	230	409	543	338	614
TOTAL LABOR CHARGE.....	\$ 777	\$1 225	\$1 432	\$1 029	\$ 2 353
OPERATING CAPITAL (including depreciation and interest)					
Soil improvement.....	\$ 85	\$ 109	\$ 87	\$ 117	\$ 130
Buildings, fences.....	237	459	473	471	811
Equipment (livestock and other).....	78	136	111	100	232
Power and machinery.....	949	1 178	1 312	967	1 432
Feed purchased.....	479	1 447	1 852	1 340	2 549
Seed and other crop expense.....	250	249	306	269	252
Livestock expense.....	108	230	408	279	429
General farm overhead.....	224	276	285	300	409
TOTAL CAPITAL CHARGE.....	\$2 410	\$4 084	\$4 834	\$3 843	\$ 6 244
MANAGEMENT CHARGE.....					
	325	543	573	318	806
TOTAL INPUTS.....	\$4 416	\$6 880	\$7 831	\$5 884	\$10 158

for soil improvement, machinery, and buildings as well as cash outlay for purchased feed, seed and crop expenses, livestock expense and miscellaneous and general farm overhead expenses. The management input was determined on individual farms by applying commercial farm management rates to the gross farm income, less purchased feed and livestock. This provided a basic management charge that was then adjusted for quality on the basis of the average rate earned on investment for 1948 and the preceding two years.

Figure 4 shows the inputs on the five systems of farming expressed on the basis of inputs per 100 acres. Thus, the relative inputs per 100 acres of land can be compared; also the proportion of inputs of land, labor, operating capital and management can be compared within systems of farming.

In all systems of farming, operating capital inputs (described above) were more than half of the total inputs. Efficient management of inputs of operating capital that result in increased production from the same inputs, or maintenance of the volume of production with lower inputs, would be effective in increasing farm earnings.

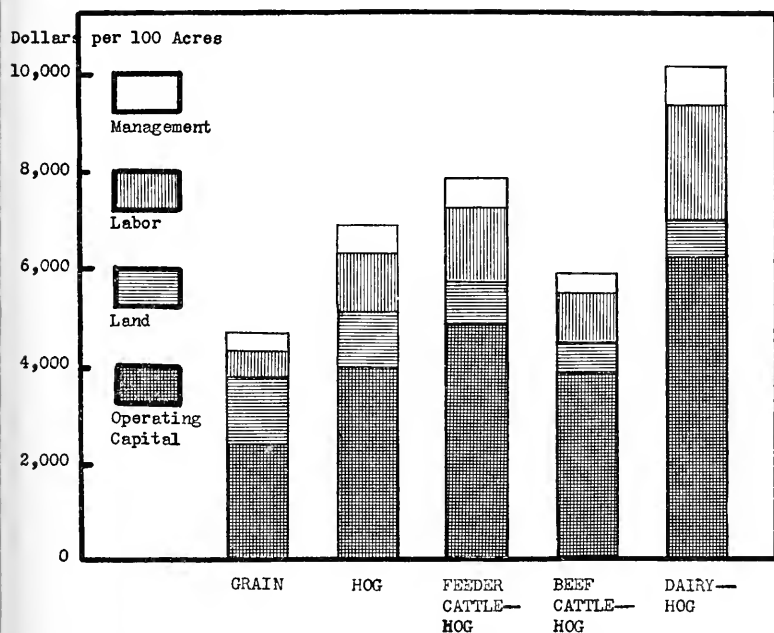


FIG. 4.—INPUTS PER 100 ACRES BY SYSTEMS OF FARMING IN WESTERN ILLINOIS, 1948

LIVESTOCK ENTERPRISE ANALYSES

Livestock enterprise analyses were made on Farm Bureau Farm Management farms on which the enterprise record was complete and accurate and on which the enterprise was as large or larger than a given minimum size. These minimum size limits were six litters of pigs, five cows in beef and dairy herds, three animal units or about 15 head of sheep, and 100 hens. Minimum size limits were used because many of the records on smaller enterprises are incomplete or inaccurate in feed or production records.

Tables 5, 6, 7 and 8 present different levels in the returns per \$100 feed fed and an average of all records. Comparison of groups of farms with high and low returns per \$100 feed fed will indicate the phases of various enterprises that contribute to high or low returns in livestock production. For example, Table 8 indicates that the number of pigs weaned per litter, the death loss after weaning, the selling price, and feed required to produce a hundred pounds of pork are related to returns per \$100 feed fed.

TABLE 5.—DAIRY ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER \$100 FEED FED

Items	All farms	Returns per \$100 feed fed	
		\$200-239	\$100-139
Number of farms.....	338	63	52
Number of cows in herd.....	15.4	15.6	13.4
Number of milk cows.....	14.9	15.1	13.0
Percent of milk cows dry.....	18	17	19
Total animal units in herd.....	21.8	21.6	20.0
Total weight produced.....	7 169	7 350	6 885
Total returns from cattle.....	\$5 169	\$5 932	\$3 555
Value of feed fed to cattle.....	2 947	2 753	2 834
Returns per \$100 feed fed.....	175	215	125
Returns above feed per milk cow.....	149	211	55
Total pounds of milk produced.....	123 893	134 341	94 445
Pounds of milk per milk cow.....	8 308	8 899	7 268
Pounds of butterfat per milk cow.....	310	332	272
Pounds of beef per cow in herd.....	465	470	514
Weight of death loss; pounds.....	653	629	624
Percent death loss by weight.....	9.1	8.6	9.1
Feed cost per unit (1000 lbs. milk or 100 lbs. beef).....	\$15.07	\$13.24	\$17.36
Prices received for each:			
100 lbs. milk produced.....	3.28	3.44	3.01
100 lbs. cattle sold.....	18.09	19.43	15.67
<i>Lbs. feed per unit of milk and beef</i>			
Grain.....	234	209	302
Protein and mineral feeds.....	43	36	40
Total concentrates.....	277	245	342
Hay and dry roughage.....	434	363	486
Hay silage.....	48	86	38
Corn and other silage.....	370	272	425
Pasture (pasture days).....	20	19	23
Pasture days per animal unit.....	177	182	185

TABLE 6.—POULTRY ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED
BY RETURNS PER \$100 FEED FED

Items	All farms	Returns per \$100 feed fed	
		\$180-229	\$100-139
Number of farms.....	470	99	113
Weight of poultry produced.....	1 703	1 588	1 640
Total returns from poultry.....	\$1 507	\$1 603	\$1 116
Total value of feed fed.....	936	792	914
Returns per \$100 feed fed.....	161	202	122
Average number of hens.....	209	199	182
Eggs produced per hen.....	177	193	155
Percent production.....	48	53	42
Hens in Oct., Nov., Dec.....	252	233	226
Percent production in Oct., Nov., Dec.....	50	55	43
Feed Req. Units (1 doz. eggs or 1.5 lbs. wt. produced).....	4 228	4 261	3 457
Feed cost per unit.....	\$.22	\$.19	\$.26
Pounds concentrates per unit.....	7.6	6.4	8.8
Weight of poultry sold.....	1 221	1 137	1 138
Average price per pound.....	\$.24	\$.26	\$.24
Price per dozen eggs sold.....	.43	.44	.41

TABLE 7.—HOG ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED
BY RETURNS PER \$100 FEED FED

Items	All farms	Returns per \$100 feed fed	
		\$160-189	\$100-129
Number of farms.....	547	126	128
Pounds of pork produced.....	42 105	44 192	38 545
Total returns from hogs.....	\$6 623	\$7 403	\$5 637
Total value of feed fed.....	4 600	4 319	4 825
Returns per \$100 feed fed.....	144	171	117
Number of litters farrowed.....	29	28	30
Number of pigs weaned.....	181	191	167
Pigs weaned per litter.....	6.3	6.8	5.6
Number that died after weaning.....	10	8	13
Weight of death loss: pounds.....	815	649	1 016
Percent of weight produced.....	1.9	1.5	2.6
Average weight per hog sold.....	244	234	245
Average price received.....	\$18.15	\$18.64	\$17.88
Feed cost per 100 lbs. produced.....	10.92	9.77	12.52
<i>Lbs. feed per 100 lbs. produced</i>			
Grain.....	405	355	469
Protein and mineral feeds.....	41	38	45
Total concentrates.....	446	393	514
Hay.....	5.0	5.0	5.3
Pasture (pasture days).....	2.1	2.0	2.3

TABLE 8.—BEEF CATTLE ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER \$100 FEED FED

Items	All farms	Returns per \$100 feed fed	
		\$160-219	\$100-129
Number of farms.....	168	37	42
Number of cows in herd.....	15.6	18.3	16.0
Number of milk cows.....	1.4	1.6	1.2
Total animal units in herd.....	25.3	27.4	26.7
Total weight produced.....	11 774	14 381	11 841
Total returns from cattle.....	\$2 649	\$3 710	\$2 538
Value of feed fed to cattle.....	2 001	2 029	2 184
Returns per \$100 feed fed.....	132	183	116
Total pounds of milk produced.....	7 000	8 677	6 022
Pounds of milk per milk cow.....	5 084	5 507	5 215
Pounds of beef per cow in herd.....	755	785	742
Weight of death loss; pounds.....	562	420	548
Percent of weight produced.....	4.8	2.9	4.6
Feed cost per unit (1000 lbs. milk or 100 lbs. beef).....	\$16.04	\$13.31	\$17.55
Price received per 100 lbs. sold.....	23.28	23.54	22.72
<i>Lbs. feed per unit of milk and beef</i>			
Grain.....	273	213	328
Protein and mineral feeds.....	20	14	27
Total concentrates.....	293	227	355
Hay and dry roughage.....	465	362	479
Hay silage.....	10	none	none
Corn and other silage.....	86	112	105
Pasture (pasture days).....	43	39	44
Pasture days per animal unit.....	211	218	204

TABLE 9.—SHEEP ENTERPRISES

Items	Native flocks	Feeder sheep
Number of farms.....	150	42
Pounds wool and mutton produced.....	2 872	10 066
Total returns from sheep.....	\$540	\$1 512
Total value of feed fed.....	381	1 456
Returns per \$100 feed fed.....	142	104
Weight of death loss; pounds.....	491	2 092
Percent of total production.....	17.1	20.8
Feed cost per cwt. produced.....	\$13.27	\$14.47
Price received per cwt. sold.....	22.04	22.46
Price paid for sheep bought.....	19.08	23.02
<i>Lbs. feed per cwt. produced</i>		
Concentrates.....	156	409
Hay.....	402	262
Silage.....	25	15
Pasture (pasture days).....	53	28

TABLE 10.—FACTORS HELPING TO ANALYZE THE FARM BUSINESS BY FARMING-TYPE AREAS, 1949

Items	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8	Area 9
Number of farms.....	92	370	392	1 192	187	221	119	72	29
Size of farm, acres.....	227	228	281	267	267	244	277	250	266
Total investment per acre.....	\$ 259	\$ 249	\$ 231	\$ 244	\$ 173	\$ 118	\$ 93	\$ 107	\$ 81
Cash receipts, total.....	\$30 738	\$26 169	\$29 456	\$24 211	\$20 980	\$12 769	\$11 474	\$11 848	\$ 7 617
Cash expenditures, total.....	23 624	19 726	21 156	16 175	13 697	8 956	8 201	7 994	6 127
Cash balance.....	7 114	6 443	8 300	8 036	7 283	3 813	3 273	3 854	1 490
Increase in inventory.....	—569	—217	—217	43	—232	576	301	304	774
Total unpaid labor.....	1 934	2 238	2 232	2 104	2 253	2 180	1 908	1 936	1 566
Net farm income.....	\$ 4 611	\$ 4 755	\$ 5 851	\$ 5 975	\$ 4 798	\$ 2 209	\$ 1 666	\$ 2 222	\$ 698
Inventory basis									
Gross receipts per acre ^a	79.80	70.19	66.09	61.49	55.95	40.11	32.70	37.78	23.71
Total expenses per acre.....	57.68	47.58	43.76	37.69	36.47	29.37	25.18	27.18	19.66
Net receipts per acre.....	\$ 22.12	\$ 22.61	\$ 22.33	\$ 23.80	\$ 19.48	\$ 10.74	\$ 7.52	\$ 10.60	\$ 4.05
Cash basis									
Gross receipts per acre.....	135.23	114.52	104.68	90.64	78.52	52.23	41.45	47.32	28.64
Total cash expense per acre ^b	112.44	96.12	83.12	68.43	59.70	45.55	36.52	39.66	28.92
Net cash income per acre.....	\$ 22.79	\$ 18.40	\$ 21.56	\$ 22.21	\$ 18.82	\$ 6.68	\$ 4.93	\$ 7.66	\$ —.28
Crop yields per acre									
Corn, bushels.....	66.0	73.5	65.7	64.0	59.5	48.8	40.6	52.0	42.1
Soybeans, bushels.....	32.0	31.7	32.6	30.8	30.6	23.0	19.1	19.8	17.9
Oats, bushels.....	48.9	51.3	52.5	48.8	40.9	25.5	18.9	18.4	21.1
Wheat, bushels.....	27.4	28.0	28.1	32.7	29.1	23.7	18.0	19.6	19.5

^a Farm products used in household included.^b Includes charge for unpaid labor.

TABLE 11.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS
IN FARMING-TYPE AREA 5, 1949

Items	Acres per farm					
	60-139		140-219		220-299	
	Livestock	Grain	Livestock	Grain	Livestock	300 or more
Number of farms.....	19	9	21	14	21	21
Acres per farm.....	106	164	175	245	249	412
Inputs (cost items)						
Land improvements.....						\$ 836
Buildings.....	\$ 209	\$ 347	\$ 265	\$ 548	\$ 489	\$ 1 097
Machinery and power.....	443	340	474	720	911	4 586
Labor.....	2 032	2 508	2 329	3 168	2 933	4 137
Taxes.....	2 121	2 118	2 534	2 768	3 477	728
Miscellaneous.....	319	465	371	772	512	292
Capital charge.....	216	75	165	129	447	3 245
Feed fed to productive livestock.....	1 119	1 428	1 368	2 523	2 074	9 237
Feed fed to nonproductive livestock.....	4 324	1 275	4 439	2 403	6 287	\$24 158
Total inputs.....	\$10 783	\$ 8 556	\$11 945	\$13 031	\$17 130	
Returns (income items)						
Labor and machinery.....	251	713	287	520	221	717
AAA and miscellaneous.....	35	54	39	94	103	116
Crop returns.....	3 299	7 710	5 758	12 179	8 006	13 382
Livestock returns.....						
Cattle—including dairy products.....	3 661	1 878	2 413	1 049	4 334	6 090
Hogs.....	3 254	3 381	3 110	2 455	4 750	8 601
Sheep.....	17	87	32	70	70	336
Poultry.....	571	453	1 302	536	796	642
Total returns.....	\$11 088	\$11 189	\$12 996	\$16 865	\$18 280	\$29 884
Net returns.....	508	2 635	1 051	3 834	1 150	5 726
Rate earned on investment, percent.....	6.36	14.21	8.84	12.60	7.77	13.82
Labor and management earnings.....	\$ 1 825	\$ 4 135	\$ 2 564	\$ 5 348	\$ 2 673	\$ 7 379
Gross earnings per acre.....	76.77	60.51	52.49	59.03	49.48	51.65
Gross expense per acre.....	63.28	35.73	38.68	33.08	36.54	29.90
Net earnings per acre.....	\$ 13.49	\$ 24.78	\$ 13.81	\$ 25.95	\$ 12.94	\$ 21.75
Land use						
Percent of land area tillable.....	83.5	93.1	83.1	94.7	77.2	73.9
Percent of tillable land in:						
Corn.....	37.4	34.9	30.1	34.4	31.1	32.5
Soybeans.....	13.7	20.0	16.3	25.4	15.4	17.4
Wheat.....	11.0	13.7	19.2	11.3	16.4	10.3
Hay and pasture.....	7.2	18.4	20.6	15.8	15.0	19.2
Other crops.....	30.7	18.4	20.6	12.8	26.5	23.2
Expense factors						
Labor cost per crop acre.....	29.02	\$ 15.18	\$ 21.21	\$ 12.96	\$ 21.77	\$ 16.01
Machinery and power cost per crop acre.....	27.80	17.98	19.49	14.83	18.36	17.75
Building cost per acre.....	4.20	2.07	2.71	2.94	3.66	2.66

TABLE 14. SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS

IN FARMING-TYPE AREA 6, 1949

Items	Acres per farm									
	60-139			140-219			220-300			
	Livestock	Dairy		Livestock	Dairy	Grain	Livestock	Dairy	Grain	
Number of farms.....	11	13		35	44	9	26	14		13
Acres per farm.....	113	106		186	176	188	258	255		247
Inputs (cost items).....										
Land improvements.....	\$ 214	\$ 240		\$ 377	\$ 362	\$ 171	\$ 373	\$ 405		\$ 491
Buildings.....	300	442		431	468	246	526	618		427
Machinery and power.....	1 523	1 761		2 228	2 302	2 246	2 412	2 833		2 574
Labor.....	1 952	2 226		2 408	2 462	2 215	2 610	2 691		2 396
Taxes.....	200	192		275	278	273	305	325		316
Miscellaneous.....	144	253		151	213	80	150	280		118
Capital charge.....	808	885		1 198	1 148	1 016	1 417	1 570		1 545
Feed fed to productive livestock.....	2 648	2 820		3 640	3 895	1 891	4 554	5 094		1 956
Total inputs.....	\$ 7 789	\$ 8 819		\$10 708	\$11 128	\$ 8 138	\$12 347	\$13 766		\$ 9 823
Returns (income items).....										
Labor and machinery.....	227	50		180	275	236	229	150		142
AAA and miscellaneous.....	32	38		78	59	44	81	90		84
Crop returns.....	3 116	2 544		5 214	4 743	5 858	6 184	5 866		7 600
Livestock returns.....										
Cattle—including dairy products.....	1 980	4 876		2 263	5 020	2 180	2 617	6 607		1 767
Hogs.....	1 134	750		2 148	912	623	3 236	1 640		954
Sheep.....	—	—		58	71	81	183	52		7
Poultry.....	1 364	739		1 178	976	768	1 295	983		440
Total returns.....	\$ 7 852	\$ 8 996		\$11 119	\$12 056	\$ 9 790	\$13 825	\$15 388		\$10 994
Net returns.....	63	177		411	928	1 652	1 478	1 622		1 171
Rate earned on investment, percent.....	5.39	6.05		6.72	9.10	13.13	10.21	10.34		8.79
Labor and management earnings.....	\$ 1 525	\$ 1 634		\$ 1 863	\$ 2 358	\$ 3 279	\$ 2 904	\$ 3 018		\$ 2 592
Gross earnings per acre.....	49.28	63.13		41.42	48.36	42.12	36.40	43.48		36.61
Gross expense per acre.....	41.55	53.12		32.75	36.60	27.89	25.16	31.17		25.61
Net earnings per acre.....	\$ 7.73	\$ 10.01		\$ 8.67	\$ 11.76	\$ 14.23	\$ 11.24	\$ 12.31		\$ 11.00
Land use.....										
Percent of land area tillable.....	87.9	81.8		80.4	83.5	81.3	79.8	77.4		80.0
Percent of tillable land in:										
Corn.....	27.5	27.4		25.9	22.4	29.6	22.4	26.4		26.8
Soybeans.....	9.8	6.5		11.2	12.2	17.8	13.8	6.1		15.9
Oats.....	9.5	11.6		8.9	11.2	30.6	10.2	10.0		7.4
Wheat.....	20.3	18.7		27.6	23.3	30.6	27.2	24.8		33.7
Hay and pasture.....	31.1	35.8		23.6	29.9	14.8	23.5	30.6		15.9
Other crops.....	1.8	.....		2.8	1.0	1.2	2.9	2.1		.3
Expense factors.....										
Labor cost per crop acre.....	\$ 24.41	\$ 31.57		\$ 19.33	\$ 20.39	\$ 15.97	\$ 15.48	\$ 16.73		\$ 13.34
Machinery and power cost per crop acre.....	19.05	24.97		17.89	19.06	16.20	14.31	17.62		14.33
Building cost per acre.....	2.66	4.17		2.32	2.65	1.31	2.04	2.42		1.73

TABLE 13.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS
IN FARMING-TYPE AREAS 7 AND 8, 1919

Items	Acres per farm					
	60-139		140-219		220-299	
	Livestock	Grain	Livestock	Grain	Livestock	Grain
Number of farms.....	20	14	47	5	27	23
Acres per farm.....	112	184	177	260	252	398
Inputs (cost items).....						
Land improvements.....						
Buildings.....	\$ 327	\$ 430	\$ 483	\$ 586	\$ 685	\$ 907
Machinery and power.....	279	246	324	425	353	442
Labor.....	1 424	1 767	1 729	2 589	2 040	3 382
Taxes.....	188	1 710	2 005	2 097	2 223	3 415
Miscellaneous.....	115	257	287	336	315	493
Capital charge.....	637	931	123	68	122	96
Feed fed to productive livestock.....	2 394	1 476	940	969	1 139	1 749
Total inputs.....	\$ 7 054	\$ 6 882	\$ 9 298	\$ 8 681	\$10 424	\$12 650
Returns (income items).....						
Labor and machinery.....	115	181	206	143	76	380
AAA and miscellaneous.....	43	84	75	41	81	109
Crop returns.....	2 172	5 555	3 536	7 269	4 826	10 055
Livestock returns.....						
Cattle—including dairy products.....	1 406	833	2 192	1 140	1 988	3 492
Hogs.....	1 975	1 144	2 526	747	2 995	1 799
Sheep.....	69	51	51	289	99	4 086
Poultry.....	929	621	1 060	766	852	213
Total returns.....	\$ 6 679	\$ 8 487	\$ 9 946	\$10 106	\$11 107	\$14 732
Net returns.....	-375	1 605	348	1 425	683	2 082
Rate earned on investment, percent.....		13.62	6.87	12.36	8.00	10.95
Labor and management earnings.....	\$ 955	\$ 2 840	\$ 1 630	\$ 2 675	\$ 1 967	\$ 3 369
Gross earnings per acre.....	43.29	38.08	39.69	32.67	30.47	30.30
Gross expense per acre.....	40.96	24.30	32.46	23.47	23.23	22.36
Net earnings per acre.....	\$ 2.33	\$ 13.78	\$ 7.23	\$ 9.20	\$ 7.24	\$ 9.63
Land use.....						
Percent of land area tillable.....	84.0	88.3	81.8	80.4	77.3	86.3
Percent of tillable land in:						
Corn.....	25.7	23.9	26.2	25.7	24.5	23.5
Soybeans.....	9.3	21.9	10.0	26.9	14.1	19.2
Oats.....	7.1	3.4	5.5	3.3	5.9	4.9
Wheat.....	17.4	21.0	16.8	24.9	15.1	15.9
Hay and pasture.....	38.3	29.9	40.2	18.9	38.0	33.7
Other crops.....	2.2	....	1.3	.3	2.4	2.7
Expense factors.....						
Labor cost per crop acre.....	\$ 25.06	\$ 13.25	\$ 19.48	\$ 11.59	\$ 16.07	\$ 14.27
Machinery and power cost per crop acre.....	21.12	13.69	16.80	14.31	14.75	14.90
Building cost per acre.....	2.48	1.33	1.84	1.63	1.40	1.45

AREA GROUPING OF FARM BUREAU FARM MANAGEMENT SERVICE RECORDS

Data presented in the following tables (Tables 14-17) were taken from Farm Bureau Farm Management Service Records. Area grouping of these records does not follow the conventional farming-type area lines because the analysis of these records was based on size and type of farm separations. This classification of farms by type or system of farming tends to eliminate the need for classification by conventional farming-type area lines since there is more difference between types of farms within an area than between the same type of farm in different areas.

The area grouping of counties shown below was determined on the basis of geographical location as well as the predominance of types of farming practiced by cooperating farmers.

<i>General farming</i>	<i>Cash grain</i>	<i>Livestock and grain</i>	<i>Dairy</i>
Adams	Champaign	Bureau	Boone
Brown	Coles	Carroll	Cook
Cass	DeWitt	DeKalb	DuPage
Clark	Douglas	Henderson	Grundy
Fulton	Edgar	Henry	JoDaviess
Mason	Ford	Knox	Kane
Menard	Iroquois	LaSalle	Kendall
Morgan	Kankakee	Lee	Lake
Pike	Livingston	McDonough	McHenry
Sangamon	Logan	Marshall-Putnam	Stephenson
Schuyler	McLean	Mercer	Will
	Macon	Ogle	Winnebago
	Moultrie	Peoria	
	Piatt	Rock Island	
	Tazewell	Stark	
	Vermilion	Warren	
	Woodford	Whiteside	

TABLE 14.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE DAIRY AREA, 1949

Items		Under 180 acres		180-259 acres	260-339 acres
		Hog farms	Dairy farms	Dairy farms	Dairy farms
Number of farms.....	1	16	41	28	10
Average size of farm.....	2	145	137	215	304
Soil rating on improved land.....	3	3.3	3.6	4.6	3.3
Inputs per farm:					
Land improvements.....	4	\$ 258	\$ 286	\$ 396	\$ 581
Buildings and fences.....	5	700	818	1 070	1 373
Machinery and power.....	6	2 404	2 665	3 391	4 547
Labor.....	7	2 452	2 902	3 678	4 705
Taxes.....	8	346	457	569	731
Miscellaneous.....	9	341	399	493	640
Capital charge.....	10	1 941	1 719	2 113	3 678
Total non-feed input.....	11	(8 442)	(9 246)	(11 710)	(16 255)
Feed fed to:					
Sheep.....	12	\$ 52	.....	\$ 28	\$ 9
Poultry.....	13	694	\$ 608	549	459
Dairy cattle.....	14	1 004	4 555	6 320	7 869
Other cattle.....	15	1 154	30	98	417
Hogs.....	16	5 562	1 285	2 032	2 495
Total feed fed.....	17	(8 466)	(6 478)	(9 027)	(11 249)
Total farm inputs.....	18	16 908	15 724	20 737	27 504
Total inputs per acre.....	19	116.43	114.40	96.36	90.35
Returns per farm:					
Labor and machinery.....	20	\$ 188	\$ 219	\$ 324	\$ 353
AAA, buildings and miscellaneous.....	21	48	82	77	72
Crop returns.....	22	7 082	5 481	8 010	10 590
Returns from:					
Sheep.....	23	\$ 122	.....	\$ 41	\$ 6
Poultry.....	24	1 120	\$ 899	931	879
Dairy cattle.....	25	1 404	7 799	10 908	14 666
Other cattle.....	26	1 140	2	58	319
Hogs.....	27	7 877	1 677	2 509	3 282
All livestock.....	28	(11 663)	(10 377)	(14 447)	(19 152)
Total farm returns.....	29	18 981	16 159	22 858	30 167
Net returns per farm.....	30	\$ 2 073	\$ 433	\$ 2 121	\$ 2 663
Net returns per \$100 non-feed input.....	31	25	5	18	16
Cash balance per farm.....	32	\$ 6 129	\$ 3 702	\$ 5 186	\$ 9 543
Inventory increase.....	33	-587	40	1 088	-1 510
Farm products consumed.....	34	553	391	420	348
Less unpaid labor.....	35	2 081	1 981	2 460	2 040
Net farm earnings.....	36	\$ 4 014	\$ 2 152	\$ 4 234	\$ 6 341
Net earnings per acre.....	37	27.64	15.66	19.67	20.83
Rate earned on investment, percent.....	38	10.34	6.26	10.02	8.62
Total investment per acre.....	39	\$ 267	\$ 250	\$ 196	\$ 242
Selected farm operating costs:					
Hired labor charge.....	40	\$ 370	\$ 921	\$ 1 219	\$ 2 665
Labor cost per crop acre.....	41	22.27	32.08	31.14	25.84
Machinery hire.....	42	384	304	292	567
Machinery repairs and maintenance.....	43	441	582	702	986
Gasoline, fuel and oil.....	44	466	456	652	869
Machinery depreciation.....	45	654	772	1 089	1 413
Power and machinery cost per crop acre.....	46	21.84	29.46	28.70	24.97
Crop acres per farm.....	47	110	90	118	182
Months of labor per farm.....	48	16.4	19.5	24.7	30.8
Percent land area tillable.....	49	87.4	85.1	70.0	76.8
Percent tillable land in:					
Corn and grain silage.....	50	43.9	34.8	35.9	36.0
Soybeans.....	51	3.0	.8	.5	.9
Small grains.....	52	27.1	24.4	22.4	25.3
Hay and pasture.....	53	26.0	40.0	41.0	37.9
Biennial and perennial legumes.....	54	23.7	35.4	38.7	36.0
Crop yields per acre:					
Corn, bushels.....	55	76.0	66.6	73.8	72.0
Soybeans, bushels.....	56	31.4	31.7	24.6	33.1
Oats, bushels.....	57	54.9	47.4	49.3	43.7
Wheat, bushels.....	58	.....	31.0	40.0	.....
Crop returns per tillable acre.....	59	\$ 55.70	\$ 46.21	\$ 51.15	\$ 44.10
Feed fed per tillable acre.....	60	66.66	55.37	59.91	48.13

TABLE 15.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE CASH GRAIN AREA, 1949

	Under 180 acres		180-259 acres		260-339 acres		340-499 acres	Over 500 acres
	Grain farms	Hog farms	Grain farms	Hog farms	Grain farms	Hog farms	Grain farms	Grain farms
1	52	24	80	29	66	31	84	43
2	147	147	221	223	303	301	406	682
3	2.3	2.4	2.3	2.7	2.3	2.7	2.3	2.5
4	\$ 286	\$ 341	\$ 460	\$ 475	\$ 600	\$ 627	\$ 729	\$ 1 505
5	536	729	728	987	800	1 256	911	1 712
6	2 136	2 414	2 776	3 334	3 581	4 085	4 593	6 858
7	2 056	2 293	2 375	3 030	3 182	3 663	3 857	6 027
8	471	539	680	714	958	921	1 197	1 837
9	186	319	213	602	246	467	306	434
10	1 776	1 957	2 610	2 786	3 410	3 630	4 386	7 046
11	(7 447)	(8 592)	(9 842)	(11 928)	(12 777)	(14 649)	(15 979)	(25 419)
12	\$ 66	\$ 41	\$ 110	\$ 87	\$ 18	\$ 104	\$ 79	\$ 43
13	384	564	459	460	369	458	377	367
14	280	376	429	443	607	458	409	683
15	336	804	741	1 205	887	2 864	1 622	3 291
16	881	4 405	1 131	6 167	1 505	7 143	1 957	3 055
17	(1 947)	(6 190)	(2 870)	(8 362)	(3 386)	(11 017)	(4 444)	(7 439)
18	9 394	14 782	12 712	20 290	16 163	25 666	20 423	32 858
19	63.97	100.66	57.51	90.93	53.29	85.23	50.24	48.21
20	\$ 343	\$ 246	\$ 218	\$ 237	\$ 280	\$ 179	\$ 363	\$ 721
21	69	70	81	135	120	99	119	256
22	7 243	6 396	10 999	9 882	14 455	13 068	19 653	32 110
23	\$ 100	\$ 37	\$ 141	\$ 29	\$ 20	\$ 78	\$ 79	\$ 35
24	631	828	684	645	590	745	540	522
25	467	704	787	755	994	796	631	1 326
26	412	848	1 035	1 634	1 235	3 810	1 972	3 312
27	1 260	5 999	1 688	8 517	2 184	10 417	2 912	4 185
28	(2 870)	(8 416)	(4 335)	(11 580)	(5 023)	(15 846)	(6 134)	(9 380)
29	10 525	15 128	15 633	21 834	19 878	29 192	26 269	42 467
30	\$ 1 130	\$ 345	\$ 2 920	\$ 1 543	\$ 3 716	\$ 3 526	\$ 5 845	\$ 9 609
31	15	4	30	13	29	24	37	38
32	\$ 4 052	\$ 4 175	\$ 7 757	\$ 5 028	\$ 8 732	\$ 6 026	\$11 966	\$18 745
33	475	-150	-722	869	178	2 783	-102	-68
34	266	370	373	360	353	394	400	418
35	1 887	2 094	1 878	1 927	2 138	2 047	2 031	2 440
36	\$ 2 906	\$ 2 301	\$ 5 530	\$ 4 330	\$ 7 125	\$ 7 156	\$10 233	\$16 655
37	19.79	15.67	25.02	19.40	23.49	23.76	25.17	24.44
38	8.18	5.88	10.59	7.76	10.45	9.86	11.66	11.82
39	\$ 242	\$ 266	\$ 236	\$ 250	\$ 225	\$ 241	\$ 216	\$ 207
40	\$ 169	\$ 199	\$ 496	\$ 1 104	\$ 1 045	\$ 1 616	\$ 1 826	\$ 3 587
41	16.44	21.26	12.74	17.76	12.34	16.10	11.22	11.09
42	292	293	333	399	381	528	534	588
43	447	522	601	765	792	984	1 133	1 908
44	399	452	591	660	830	893	1 093	1 796
45	673	742	863	1 071	1 149	1 233	1 337	2 268
46	17.08	22.38	14.90	19.54	13.89	17.96	13.36	12.62
47	125	108	186	171	258	227	344	543
48	13.7	15.3	16.0	19.8	22.1	22.0	24.9	37.4
49	94.0	89.4	93.6	91.6	93.2	89.2	92.3	87.4
50	45.4	49.2	42.2	45.4	43.6	43.7	41.9	42.4
51	14.5	3.4	17.2	5.2	17.2	8.8	18.1	15.0
52	26.7	22.0	25.6	25.4	25.8	24.1	27.3	30.0
53	13.2	25.3	14.2	23.5	13.5	22.4	12.2	12.4
54	9.7	20.7	10.7	18.2	10.2	17.6	9.6	9.8
55	63.8	65.0	63.0	64.3	62.2	66.3	63.1	63.6
56	32.0	35.3	31.7	31.3	31.5	29.8	30.2	30.9
57	49.2	52.8	48.5	48.4	47.6	50.7	48.3	45.4
58	30.6	28.2	34.5	30.9	33.8	32.0	32.9	32.3
59	\$ 52.34	\$ 48.34	\$ 53.00	\$ 47.92	\$ 50.88	\$ 48.17	\$ 52.04	\$ 53.48
60	14.09	47.15	13.87	40.89	11.98	41.02	11.84	12.48

TABLE 16.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE LIVESTOCK AND GRAIN AREA, 1949

Items		Under 180 acres			
		Grain farms	Hog farms	Dairy farms	Mixed livestock
Number of farms	1	14	71	25	17
Average size of farm	2	138	145	144	140
Soil rating on improved land	3	2.7	2.8	3.3	2.9
Inputs per farm:					
Land improvements	4	\$ 259	\$ 309	\$ 250	\$ 189
Buildings and fences	5	570	875	759	760
Machinery and power	6	2 099	2 471	2 501	2 068
Labor	7	1 933	2 454	2 769	2 219
Taxes	8	385	467	388	420
Miscellaneous	9	115	378	335	360
Capital charge	10	1 599	1 981	1 688	1 892
Total non-feed input	11	(6 960)	(8 935)	(8 690)	(7 908)
Feed fed to:					
Sheep	12	\$ 87	\$ 47	\$ 31	\$ 443
Poultry	13	180	422	465	510
Dairy cattle	14	164	502	2 768	575
Other cattle	15	382	1 392	465	2 355
Hogs	16	1 197	5 799	1 630	2 683
Total feed fed	17	(2 010)	(8 162)	(5 359)	(6 566)
Total farm inputs	18	8 970	17 097	14 049	14 474
Total inputs per acre	19	64.86	118.11	97.43	103.41
Returns per farm:					
Labor and machinery	20	\$ 156	\$ 215	\$ 237	\$ 182
AAA, buildings and miscellaneous	21	52	70	52	65
Crop returns	22	6 559	6 235	6 014	5 603
Returns from:					
Sheep	23	\$ 129	\$ 54	\$ 13	\$ 590
Poultry	24	287	647	703	770
Dairy cattle	25	356	901	4 664	915
Other cattle	26	562	1 853	687	3 068
Hogs	27	1 754	8 362	2 259	3 686
All livestock	28	(3 088)	(11 817)	(8 326)	(9 029)
Total farm returns	29	9 855	18 337	14 629	14 879
Net returns per farm	30	\$ 886	\$ 1 239	\$ 580	\$ 405
Net returns per \$100 non-feed input	31	13	14	7	5
Cash balance per farm	32	\$ 2 924	\$ 5 075	\$ 2 977	\$ 2 485
Inventory increase	33	1 156	-225	1 078	1 235
Farm products consumed	34	237	353	402	493
Less unpaid labor	35	1 832	1 983	2 190	1 915
Net farm earnings	36	\$ 2 485	\$ 3 220	\$ 2 267	\$ 2 298
Net earnings per acre	37	17.97	22.25	15.73	16.42
Rate earned on investment, percent	38	7.77	8.13	6.72	6.07
Total investment per acre	39	\$ 231	\$ 274	\$ 234	\$ 270
Selected farm operating costs:					
Hired labor charge	40	\$ 101	\$ 472	\$ 578	\$ 305
Labor cost per crop acre	41	18.20	22.75	28.76	20.58
Machinery hire	42	282	359	361	247
Machinery repairs and maintenance	43	415	560	496	442
Gasoline, fuel and oil	44	432	445	419	359
Machinery depreciation	45	521	746	702	721
Power and machinery cost per crop acre	46	19.77	22.90	25.98	19.17
Crop acres per farm	47	106	108	96	108
Months of labor per farm	48	12.7	16.5	19.0	15.2
Percent land area tillable	49	91.9	88.4	81.6	87.8
Percent tillable land in:					
Corn and grain silage	50	43.7	42.9	39.7	46.7
Soybeans	51	2.7	1.0	2.2	1.2
Small grains	52	31.7	28.2	23.2	27.5
Hay and pasture	53	21.8	27.9	34.8	24.4
Biennial and perennial legumes	54	20.1	25.1	30.1	21.7
Crop yields per acre:					
Corn, bushels	55	69.5	69.0	69.8	61.1
Soybeans, bushels	56	37.2	33.4	33.5	30.3
Oats, bushels	57	54.0	52.2	50.3	49.4
Wheat, bushels	58	28.4	27.8	...	19.0
Crop returns per tillable acre	59	\$ 51.62	\$ 48.30	\$ 49.86	\$ 45.02
Feed fed per tillable acre	60	15.82	63.75	45.54	53.43

TABLE 16.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE LIVESTOCK AND GRAIN AREA, 1949 (CONTINUED)

	180 to 259 acres				260 to 339 acres			
	Grain farms	Hog farms	Beef cattle farms	Mixed livestock	Grain farms	Hog farms	Beef cattle farms	Mixed livestock
1	25	63	15	16	17	48	21	12
2	229	218	223	214	301	307	299	306
3	2.6	2.6	3.2	3.1	2.3	2.8	2.4	2.9
4	\$ 381	\$ 377	\$ 410	\$ 453	\$ 615	\$ 546	\$ 554	\$ 469
5	791	975	1 087	1 280	1 066	1 356	1 549	1 754
6	2 885	3 152	3 201	3 140	3 662	4 463	4 362	3 795
7	2 827	3 220	3 283	2 839	3 385	3 742	4 253	3 854
8	544	618	568	580	739	871	949	722
9	243	432	360	309	295	565	458	362
10	2 600	2 737	3 176	2 670	3 507	3 711	4 766	3 923
11	(10 271)	(11 511)	(12 085)	(11 271)	(13 269)	(15 254)	(16 891)	(14 879)
12	\$ 4	\$ 61	\$ 9	\$ 46	\$ 21	\$ 124	\$ 13	\$ 201
13	316	416	747	684	299	414	355	822
14	445	666	218	640	555	482	290	1 054
15	978	1 873	7 753	3 623	1 197	2 811	12 198	4 528
16	1 951	6 991	3 237	3 803	2 154	9 694	5 545	4 584
17	(3 694)	(10 007)	(11 964)	(8 796)	(4 226)	(13 525)	(18 401)	(11 189)
18	13 965	21 518	24 049	20 067	17 495	28 779	35 292	26 068
19	61.03	98.50	107.94	93.72	58.13	93.87	118.05	85.24
20	\$ 162	\$ 157	\$ 299	\$ 133	\$ 464	\$ 463	\$ 338	\$ 136
21	114	124	37	76	286	119	104	116
22	10 458	9 276	8 904	9 296	14 667	12 441	13 912	12 862
23	\$ 3	\$ 43	\$ 5	\$ 57	\$ 6	\$ 161	\$ 17	\$ 407
24	505	690	1 054	1 006	459	641	571	1 071
25	952	1 259	315	1 088	922	714	478	2 019
26	1 170	2 363	10 022	4 480	1 682	3 819	18 115	5 310
27	2 623	9 746	4 711	5 519	2 795	13 264	8 372	6 737
28	(5 253)	(14 101)	(16 107)	(12 150)	(5 864)	(18 599)	(27 553)	(15 544)
29	15 987	23 658	25 347	21 655	21 281	31 622	41 907	28 658
30	\$ 2 022	\$ 2 139	\$ 1 296	\$ 1 587	\$ 3 785	\$ 2 844	\$ 6 615	\$ 2 590
31	20	19	11	14	29	19	39	17
32	\$ 6 419	\$ 7 377	\$ 7 716	\$ 5 149	\$10 223	\$ 8 380	\$15 524	\$ 8 368
33	151	-641	-1 503	718	-833	-82	-2 469	388
34	368	402	414	349	355	470	497	539
35	2 316	2 261	2 155	1 959	2 453	2 213	2 171	2 781
36	\$ 4 622	\$ 4 877	\$ 4 472	\$ 4 257	\$ 7 292	\$ 6 555	\$11 381	\$ 6 514
37	20.20	22.32	20.07	19.88	24.23	21.38	38.07	21.30
38	8.91	8.90	7.04	7.97	10.40	8.83	11.90	8.30
39	\$ 227	\$ 251	\$ 285	\$ 249	\$ 233	\$ 242	\$ 319	\$ 257
40	\$ 511	\$ 959	\$ 1 128	\$ 880	\$ 932	\$ 1 530	\$ 2 082	\$ 1 072
41	15.14	20.07	22.85	18.27	14.27	17.33	19.92	17.83
42	437	380	336	408	434	435	351	356
43	570	741	714	696	790	1 122	1 111	970
44	571	637	580	538	771	848	889	682
45	947	978	1 037	889	1 228	1 552	1 463	1 185
46	15.45	19.65	22.28	20.20	15.45	20.66	20.43	17.56
47	187	160	144	155	237	216	214	216
48	19.4	21.0	23.0	18.7	22.7	24.7	26.8	25.1
49	90.4	87.7	79.4	87.6	88.9	82.2	86.2	86.1
50	46.7	45.6	39.7	42.9	44.1	44.5	46.9	41.6
51	5.3	2.0	1.7	2.1	6.3	3.0	2.1	4.3
52	30.0	25.4	26.7	26.5	31.7	29.6	24.0	26.5
53	18.0	26.5	31.6	28.4	17.9	22.8	26.9	27.6
54	16.1	22.9	27.0	20.4	15.6	19.8	22.9	25.4
55	64.2	67.6	71.8	68.5	66.2	66.7	70.0	66.6
56	32.8	28.4	29.4	34.1	34.6	33.0	35.9	31.8
57	52.9	53.2	50.4	50.3	54.7	51.3	54.5	50.3
58	36.0	27.4	...	...	34.4	30.0	19.4	...
59	\$ 50.28	\$ 48.00	\$ 48.75	\$ 48.92	\$ 54.51	\$ 48.56	\$ 53.24	\$ 48.16
60	17.85	52.25	67.62	46.91	15.80	53.65	71.39	42.50

TABLE 16.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE LIVESTOCK AND GRAIN AREA, 1949 (CONCLUDED)

Items		340 to 499 acres			Over 500 acres
		Grain farms	Hog farms	Beef cattle farms	Hog farms
Number of farms.....	1	17	43	27	16
Average size of farm.....	2	417	392	428	636
Soil rating on improved land.....	3	2.8	2.8	2.6	3.4
Inputs per farm:					
Land improvements.....	4	\$ 637	\$ 644	\$ 718	\$ 973
Buildings and fences.....	5	1 311	1 477	1 889	2 811
Machinery and power.....	6	4 883	4 692	4 833	7 448
Labor.....	7	4 252	4 713	5 131	6 399
Taxes.....	8	1 044	1 067	1 036	1 193
Miscellaneous.....	9	375	734	542	926
Capital charge.....	10	4 379	4 426	5 222	6 049
Total non-feed input.....	11	(16 881)	(17 753)	(19 371)	(25 799)
Feed fed to:					
Sheep.....	12	\$ 28	\$ 124	\$ 62	\$ 204
Poultry.....	13	308	324	274	289
Dairy cattle.....	14	96	433	295	795
Other cattle.....	15	3 375	4 273	11 448	7 589
Hogs.....	16	2 868	11 571	5 387	16 136
Total feed fed.....	17	(6 675)	(16 725)	(17 466)	(25 013)
Total farm inputs.....	18	23 556	34 478	36 837	50 812
Total inputs per acre.....	19	56.49	87.89	86.04	79.85
Returns per farm:					
Labor and machinery.....	20	\$ 402	\$ 289	\$ 420	\$ 377
AAA, buildings and miscellaneous.....	21	427	170	174	267
Crop returns.....	22	18 972	15 994	16 570	22 615
Returns from:					
Sheep.....	23	\$ 29	\$ 158	\$ 90	\$ 384
Poultry.....	24	477	437	398	348
Dairy cattle.....	25	257	666	1 289	939
Other cattle.....	26	4 408	5 663	14 284	11 604
Hogs.....	27	4 654	16 131	7 808	23 139
All livestock.....	28	(9 825)	(23 055)	(23 869)	(36 414)
Total farm returns.....	29	29 626	39 508	41 033	59 673
Net returns per farm.....	30	\$ 6 072	\$ 5 032	\$ 4 198	\$ 8 861
Net returns per \$100 non-feed input.....	31	36	28	22	34
Cash balance per farm.....	32	\$10 595	\$10 192	\$10 692	\$10 879
Inventory increase.....	33	1 726	1 176	757	5 932
Farm products consumed.....	34	341	456	427	386
Less unpaid labor.....	35	2 210	2 367	2 456	2 288
Net farm earnings.....	36	\$10 452	\$ 9 457	\$ 9 420	\$14 909
Net earnings per acre.....	37	25.06	24.11	22.00	23.43
Rate earned on investment, percent.....	38	11.93	10.68	9.02	12.32
Total investment per acre.....	39	\$ 210	\$ 226	\$ 244	\$ 190
Selected farm operating costs:					
Hired labor charge.....	40	\$ 2 041	\$ 2 347	\$ 2 675	\$ 4 112
Labor cost per crop acre.....	41	13.16	17.53	18.30	17.37
Machinery hire.....	42	592	524	574	783
Machinery repairs and maintenance.....	43	1 206	1 243	1 180	2 296
Gasoline, fuel and oil.....	44	1 185	939	1 002	1 516
Machinery depreciation.....	45	1 330	1 415	1 631	2 194
Power and machinery cost per crop acre.....	46	15.11	17.44	17.24	20.22
Crop acres per farm.....	47	323	269	280	368
Months of labor per farm.....	48	28.0	30.6	32.3	38.8
Percent land area tillable.....	49	86.0	81.7	75.9	69.2
Percent tillable land in:					
Corn and grain silage.....	50	46.7	44.0	44.3	43.2
Soybeans.....	51	9.9	4.4	2.8	3.9
Small grains.....	52	26.9	26.3	27.2	26.2
Hay and pasture.....	53	16.5	25.2	25.1	25.9
Biennial and perennial legumes.....	54	13.2	22.0	21.1	21.2
Crop yields per acre:					
Corn, bushels.....	55	66.6	67.1	67.3	65.5
Soybeans, bushels.....	56	32.2	30.9	29.6	34.4
Oats, bushels.....	57	52.5	51.9	52.5	52.1
Wheat, bushels.....	58	22.3	24.3	31.3	29.0
Crop returns per tillable acre.....	59	\$ 52.75	\$ 48.95	\$ 49.23	\$ 49.65
Feed fed per tillable acre.....	60	18.62	52.16	53.76	56.79

TABLE 17.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE GENERAL FARMING AREA, 1949

	Under 180 acres		180 to 259 acres		260 to 339 acres		340 to 499 acres	
		Hog farms	Grain farms	Hog farms	Grain farms	Hog farms	Grain farms	Hog farms
1		15	10	32	19	19	16	16
2		148	220	216	306	292	432	408
3		4.4	3.8	5.2	4.0	4.2	4.9	4.0
4	\$	348	\$ 388	\$ 388	\$ 619	\$ 528	\$ 1 055	\$ 898
5		568	670	632	626	718	1 033	1 197
6		2 552	2 745	2 824	3 469	3 354	4 791	5 363
7		2 812	2 514	2 678	3 188	3 553	4 013	4 474
8		408	502	473	734	707	934	947
9		299	203	248	233	406	297	829
10		1 454	2 046	1 746	2 572	2 669	3 304	3 864
11		(8 441)	(9 068)	(8 989)	(11 441)	(11 935)	(15 427)	(17 572)
12	\$	43	\$ 58	\$ 8	\$ 23	\$ 160	\$ 42	\$ 56
13		451	347	457	391	291	589	292
14		196	238	576	329	399	220	395
15		1 070	479	919	1 096	2 390	1 856	2 184
16		5 020	2 578	4 640	1 705	7 264	2 277	9 964
17		(6 780)	(3 700)	(6 600)	(3 544)	(10 504)	(4 984)	(12 891)
18		15 221	12 768	15 589	14 985	22 439	20 411	30 463
19		102.99	57.96	72.07	48.91	76.58	47.27	74.70
20	\$	402	\$ 256	\$ 273	\$ 407	\$ 158	\$ 295	\$ 296
21		100	89	49	71	72	246	139
22		5 644	9 990	6 903	13 524	10 280	18 206	14 014
23	\$	50	\$ 66	\$ 4	\$ 21	\$ 182	\$ 30	\$ 85
24		698	518	710	535	408	698	391
25		372	440	926	569	542	353	492
26		1 236	704	1 345	1 288	2 891	2 412	3 269
27		7 602	3 996	6 726	2 601	11 302	3 180	15 462
28		(9 958)	(5 724)	(9 711)	(5 014)	(15 325)	(6 673)	(19 699)
29		16 104	16 059	16 936	19 016	25 835	25 420	34 148
30	\$	883	\$ 3 291	\$ 1 347	\$ 4 031	\$ 3 396	\$ 5 009	\$ 3 684
31		10	36	15	35	28	32	21
32	\$	5 672	\$ 6 179	\$ 5 273	\$ 7 538	\$ 9 039	\$12 261	\$10 955
33		-1 583	686	-354	819	-1 142	-1 728	-1 709
34		459	497	393	390	426	368	486
35		2 211	2 025	2 220	2 144	2 258	2 588	2 184
36	\$	2 337	\$ 5 337	\$ 3 092	\$ 6 603	\$ 6 065	\$ 8 313	\$ 7 548
37		15.81	24.23	14.30	21.55	20.70	19.25	18.51
38		8.04	13.04	8.86	12.80	11.36	12.58	9.77
39	\$	197	\$ 186	\$ 161	\$ 168	\$ 182	\$ 153	\$ 190
40	\$	602	\$ 489	\$ 458	\$ 1 044	\$ 1 295	\$ 1 425	\$ 2 290
41		28.42	14.13	19.70	13.22	19.06	12.28	16.61
42		386	258	328	283	342	592	600
43		588	613	665	839	834	1 171	1 489
44		450	515	505	804	698	1 089	1 105
45		680	970	945	1 077	1 085	1 520	1 503
46		25.80	15.43	20.78	14.38	18.00	14.66	19.91
47		99	178	136	241	186	327	269
48		18.6	16.7	18.2	21.9	24.9	28.1	31.2
49		81.0	91.1	77.9	87.0	76.7	82.7	77.2
50		43.5	38.4	36.7	37.6	36.5	35.5	39.2
51		5.8	20.3	8.3	19.2	13.6	22.9	14.1
52		25.9	25.4	28.1	28.8	26.1	29.6	26.0
53		24.8	15.9	26.9	14.3	23.8	11.9	20.7
54		18.4	12.8	20.4	10.2	16.1	9.0	16.6
55		63.0	61.6	56.9	58.7	61.2	51.9	60.1
56		32.5	28.2	28.1	30.6	29.7	30.0	31.2
57		48.0	52.4	39.6	44.3	46.4	44.3	45.6
58		30.4	30.7	25.7	34.0	31.3	31.0	28.8
59	\$	45.03	\$ 49.45	\$ 40.07	\$ 50.36	\$ 44.42	\$ 50.20	\$ 43.32
60		56.65	18.44	39.16	13.30	46.76	13.95	40.96

Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. ⁹ Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. ¹⁰ Federal Reserve Bulletin of Federal Reserve Board. ¹¹ Preliminary estimate. ¹² Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹³ Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.



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TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production ¹
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period..	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-	
1934.....	93	86	76	96	79	68	71	80	68	75
1935.....	99	104	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	306	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	247	275	207	383	392	189	303	351	192
1949.....	192	218	218	200	343	346	176	308	325	176
1949 July....	191	219	216	200	339	402	201	300	313	161
Aug.....	190	214	216	199	363	343	172	301	323	170
Sept.....	190	215	224	198	392	356	180	302	335	174
Oct.....	189	210	213	196	471	559	285	299	321	166
Nov.....	188	206	207	196	457	367	187	302	314	173
Dec.....	188	204	202	196	349	333	170	307	329	179
1950 Jan.....	188	204	201	199	337	379	190	314	329	183
Feb.....	190	209	209	198	240	307	155	320	330	180
Mar.....	190	210	209	200	247	325	163	327	334	187
Apr.....	190	210	213	200	232	258	129	319	337	190
May.....	193	217	226	203	266	332	163	319	349	195
June.....	195	218	226	204	274	285	140	323	362	199
July.....	202	232	241	204	353	393	193	324	...	197

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			Sept. 1949	Current months, 1950		
	1935-39	1948	1949		July	Aug.	Sept.
Corn, bu.....	\$.66	\$1.89	\$1.17	\$1.15	\$1.42	\$1.42	\$1.43
Oats, bu.....	.31	.94	.64	.59	.73	.70	.73
Wheat, bu.....	.86	2.23	1.95	1.84	2.04	2.03	2.01
Barley, bu.....	.62	1.58	1.07	.95	1.26	1.28	1.27
Soybeans, bu.....	.90	3.20	2.19	2.16	2.99	2.42	2.31
Hogs, cwt.....	8.52	23.71	18.58	20.00	20.80	21.00	20.90
Beef cattle, cwt.....	7.88	24.77	21.62	23.00	26.60	25.90	26.50
Lambs, cwt.....	8.36	23.44	23.36	22.90	24.50	24.90	26.10
Milk cows, head.....	58.00	194.17	198.33	200.00	210.00	225.00	225.00
Veal calves, cwt.....	8.66	26.29	25.42	26.00	28.70	28.70	29.50
Sheep, cwt.....	3.58	8.93	8.70	7.50	8.40	9.00	10.50
Butterfat, lb.....	.27	.73	.58	.58	.56	.56	.57
Milk, cwt.....	1.68	4.48	3.47	3.55	3.10	3.25	3.40
Eggs, doz.....	.19	.42	.40	.47	.27	.30	.33
Chickens, lb.....	.15	.30	.27	.24	.23	.26	.24
Wool, lb.....	.25	.42	.42	.42	.50	.52	.53
Apples, bu.....	1.08	2.33	2.38	1.25	2.75	2.30	2.45
Hay, ton ¹³	9.39	29.64	22.68	20.50	18.70	19.40	19.60

^{1 13} For sources of data in tables see preceding page.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. H. P. Rusk, Director. Acts approved by Congress May 8 and June 30, 1914

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS

College of Agriculture • University of Illinois • Department of Agricultural Economics

G. L. Jordan, Editor

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Articles in This Issue

Illinois People Are Drinking More Milk — R. W. BARTLETT and W. E. COLLINS.....	1073
Does It Pay to Grow Grass and Legumes? — F. J. REISS.....	1084
Where Should Illinois Farmers Sell Hogs? — W. J. WILLS.....	1091

ILLINOIS PEOPLE ARE DRINKING MORE MILK¹

Nutritionists recommend one quart of milk a day for children and one pint a day for adults as being necessary for an adequate diet. On the basis of distribution of population this would amount to about 1.4 pints daily per person, or not quite double the amount of milk actually being con-

¹This study was made possible by funds from the Research Marketing Act of 1946. Milk sales for Chicago, St. Louis, and the Quad-Cities were obtained through the courtesy of the federal administrators in these markets. The authors wish to acknowledge the courtesy of the managers and other personnel in providing milk sales data for the following Illinois markets:

(1) *Bloomington*: Beatrice Foods Company; Leasehe Dairy; Little Boss Dairy; Murray Dairy (Roszell's products); Normal Sanitary Dairy; Savoie Dairy; and Soldwedel Dairy Company.

(2) *Champaign-Urbana*: Adair Milk Farm; Dean's Dairy; Hudson Dairy; Meadow Gold Dairy; Rantoul Dairy; Urbana Pure Milk Company; Leslie E. Gard (agent for Eisner Grocery Company).

(3) *Danville*: Beatrice Foods Company; Bomgart Dairy; Everpure Dairy Products; Hansen Dairy; Illinois Dairy; Producers' Dairy; and Piggly-Wiggly Grocery Chain.

(4) *Decatur*: Decatur Milk Company; Bob White Dairy; Kembrook Dairy; Decatur-Phillips Dairy; Sunshine Dairy; and Decatur-Union Dairy.

(5) *Peoria*: Barland Dairy; Baker-Stuber Dairy; E. J. Pauli and Sons (Del's products); J. D. Roszell Company; Jubilee Dairy; Meadowbrook Dairy; Producers' Dairy; Schierers Dairy; Schwabb's Dairy; and Stafford's Dairy.

(6) *Quincy*: Durst Dairy; Halfpop Dairy; Keck Brothers' Dairy; Midwest Dairy; Modern Dairy; Producers' Dairy; Willer Dairy; and Zehnle Dairy.

(7) *Springfield*: Beatrice Foods Company; Creamy Way Dairy; Homelet Dairy; Modern Dairy Service; Producers' Dairy; Quality Dairy; Rector Dairy; Sangamon Dairy; Springfield Dairy; Stremsterfer Dairy; and Sugar Creek Dairy.

Data on milk sales for 11 eastern markets were obtained from the report of the United States Department of Agriculture; "Consumption of Fluid Milk and Cream in

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

sumed. In 1949 the average milk consumption in ten Illinois markets was .80 pint daily per person and in 11 eastern markets .74 pint daily (Figure 1).

Danville Has Highest Sales of Milk. Why?

In 1949, milk sales in Danville were the highest of the ten Illinois markets, and higher than those of any of the 11 eastern markets (Figure 2). In 1940, per capita sales of milk in Danville averaged .74 pint daily, or 34 percent above the ten-market average. By 1949 milk consumption in Danville had increased to .99 pint daily per person. This was 18 percent above that for New York City, the highest of the 11 eastern markets.

High milk sales in Danville can be closely associated with large sales of low-priced milk at milk depots between 1934 and 1939, and the introduction of a two-cent store differential in the late 1940's.

Between 1934 and 1939, the usual depot price was eight cents per quart or four quarts for 28 cents. This compared with ten cents per quart for home-delivered milk in Danville. A great deal of publicity went along with this program and people in Danville became accustomed to using more milk.

In 1948 a Chicago dealer made arrangements with a Danville dealer to sell grade A milk through stores and homes in Danville. This resulted in a lawsuit by the city of Danville against this dealer which was finally settled out of court. This court action caused a great deal of publicity which helped to increase the sales of milk.

What Has Happened to Milk Sales in Other Markets?

Between 1940 and 1949, milk sales increased faster in Springfield than in any of the other Illinois markets (Figure 2). In 1949, per capita sales of milk in Springfield were 70 percent higher than those in 1940. Peoria ranked next to Springfield with a 67 percent increase. Following Peoria were the Quad-Cities (Moline, East Moline, Rock Island, and Davenport) with a 56 percent increase.

Milk sales in Chicago, the largest market in the state, increased 33 per-

(Continued from preceding page.)

Northeastern Marketing Areas," March, 1950. Milk sales for Philadelphia in 1940 were taken from "The Milk Industry" (Bartlett), page 209. Between 1940 and 1944, milk sales in ten eastern markets increased 25 percent. The 1944 per capita sales for Niagara Frontier (Buffalo) were projected backward to 1940 on the basis of this proportion. One percent of milk sales were deducted for milk drinks in Connecticut, Boston, Niagara Frontier, and Rochester.

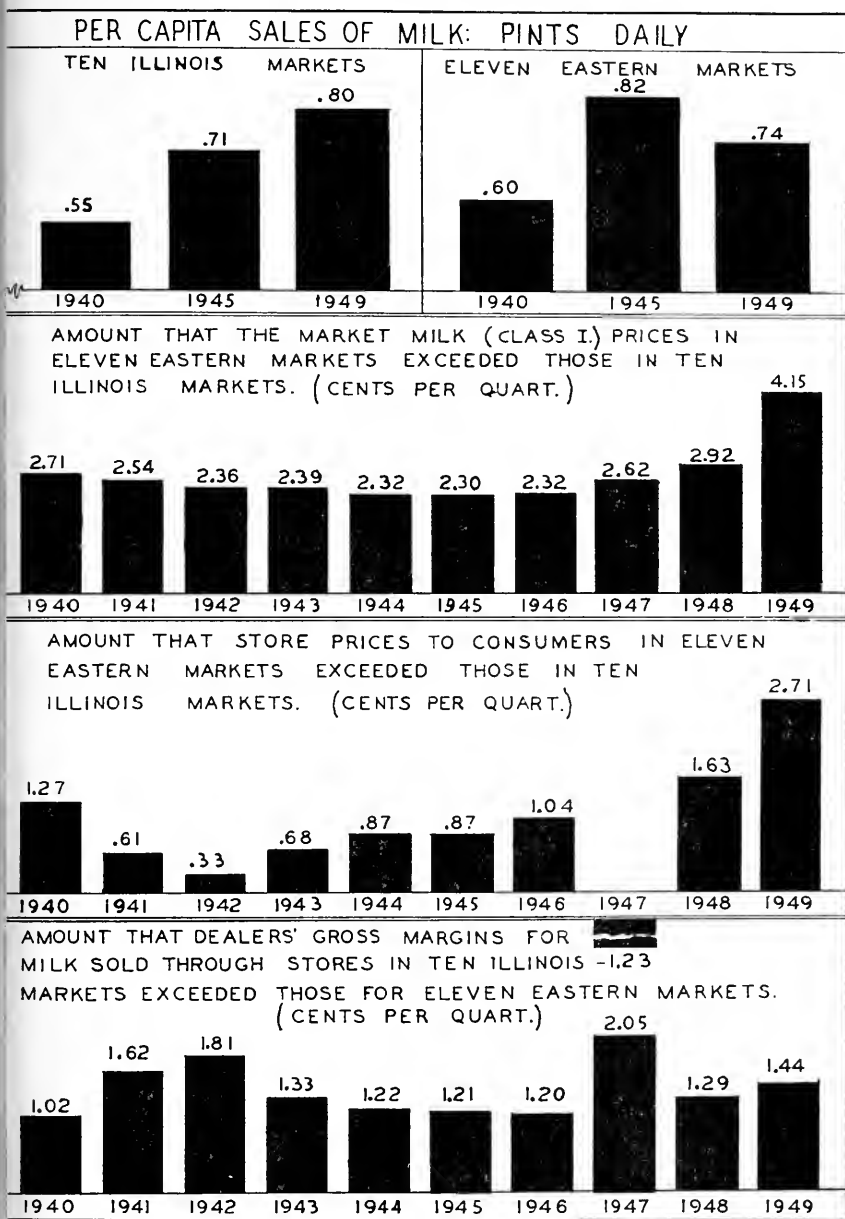


FIG. 1. — AVERAGE PER CAPITA SALES OF MILK IN TEN ILLINOIS MARKETS AND ELEVEN EASTERN MARKETS, 1940, 1945, AND 1949, AND SPECIFIC FACTORS AFFECTING CHANGES IN MILK SALES, 1940 TO 1949

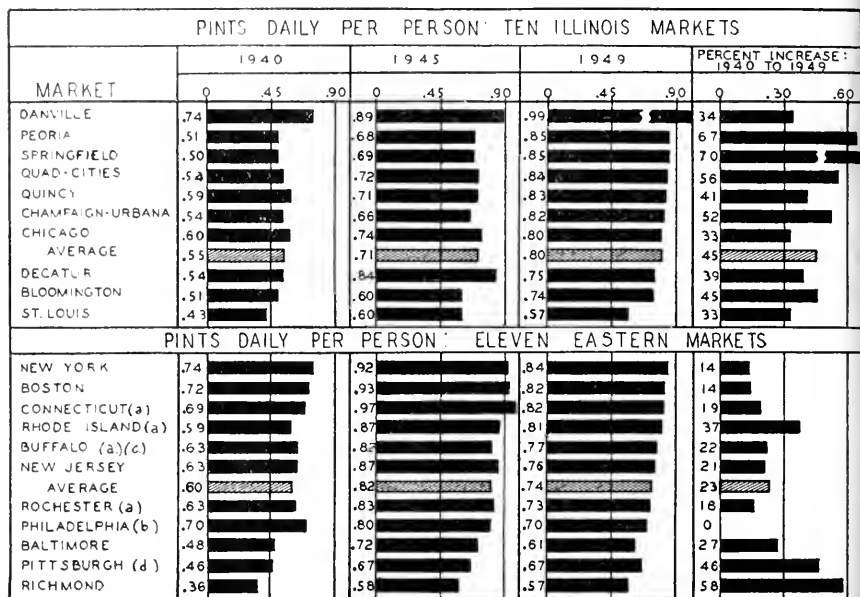


FIG. 2. — PER CAPITA SALES IN TEN ILLINOIS MARKETS AND ELEVEN EASTERN MARKETS, 1940, 1945, AND 1949

cent between 1940 and 1949. This compared with a 14 percent increase in milk sales in the New York market in this same period.

Per capita sales of milk *increased* in eight of the ten Illinois markets between 1945 and 1949. In 1949, per capita milk sales in Decatur were 10.7 percent less and in St. Louis, 5.0 percent less than in 1945. In contrast, milk sales *decreased* in nine of the 11 eastern markets between 1945 and 1949. In 1949, per capita milk sales in Richmond were 1.8 percent higher than in 1945 while sales in Pittsburgh remained the same as those in 1945.

What Has Been Happening to Milk Sales in Recent Years?

Milk sales in ten Illinois markets between 1940 and 1949 increased much faster than those in 11 large eastern markets (Figure 1). Per capita sales of milk in the ten Illinois markets, which together had a population of over 7,000,000 people, increased from .55 pint daily in 1940 to .80 pint daily in 1949, a net increase of 45 percent. This was about double the 23 percent increase in milk sales in 11 large eastern markets during this same period.

Between 1945 and 1949, per capita sales of milk in the ten Illinois markets *increased* 12.7 percent in contrast to a 9.9 percent *decrease* in milk

sales in the 11 eastern markets during this same period. Increases in milk sales in Illinois were associated with store prices which were lower as compared with home-delivered prices, higher consumer incomes, and keeping of market milk (Class I) prices in line with prices of manufactured dairy products.

The loss of milk sales in eastern markets from 1945 to 1949 amounted to a total of 374,000,000 quarts annually. Had per capita sales in the eastern markets increased from 1945 to 1949 at the same proportion as those in the Illinois markets, total milk sales in the eastern markets in 1949 would have been 421,000,000 quarts higher than they actually were.

What Changes Have Taken Place in Population?

The population of Illinois increased from 7,897,421 in 1940 to 8,696,490 in 1950, a net increase of 10.1 percent.

Population of the ten Illinois markets included in this study increased from 6,641,642 in 1940 to 7,231,950 in 1949, a net increase of 8.9 percent (Table 1). Champaign-Urbana had the greatest increase in population, that for 1949 being 28.5 percent higher than its population in 1940. Increases in population expand the market for milk as well as increases in per capita sales.

Population in the 11 eastern markets was 10.4 percent higher in 1949 than in 1940.

TABLE 1.—POPULATION IN SPECIFIC MARKETS IN ILLINOIS
AND IN THE EAST, 1940 AND 1949

	1940	1949	Percent increase 1940 to 1949
<hr/>			
Illinois markets:	(thousands)		
Champaign-Urbana.....	49.5	63.6	28.5
St. Louis.....	1,173.8	1,333.0	13.5
Decatur.....	64.5	72.9	13.0
Bloomington.....	42.0	46.6	11.0
Quad-Cities.....	178.9	198.4	10.8
Peoria.....	127.4	138.7	8.9
Chicago.....	4,835.7	5,201.5	7.4
Springfield.....	85.9	91.5	6.5
Danville.....	40.4	41.4	2.5
Quincy.....	43.5	44.4	2.1
Total.....	6,641.6	7,232.0	8.9
Eleven eastern markets:			
Connecticut.....	1,617	1,950	20.6
New Jersey.....	4,057	4,775	17.7
Richmond.....	243	280	15.2
Rochester.....	415	474	14.2
Baltimore.....	860	954	10.9
Buffalo.....	894	975	9.1
Philadelphia.....	2,349	2,550	8.6
New York.....	8,650	9,274	7.2
Boston.....	2,020	2,158	6.8
Pittsburgh.....	1,394	1,482	6.3
Rhode Island.....	694	728	4.9
Total.....	23,193	25,600	10.4

Source: Population for metropolitan milk markets from United States Bureau of Census, 1940 and 1950. Intercensal years interpolated on a straight-line basis.

What Has Happened to Milk Prices to Consumers?

Milk prices to consumers in 1949 were lower in Quincy than in any other Illinois market (Figures 3 and 4). The home-delivered price in Quincy in 1949 averaged 16 cents per quart or 2.68 cents less than the ten-market average. Store prices in Quincy were two cents a quart less than home-delivered prices.

The Quad-Cities ranked next to Quincy with a home-delivered price of 19.5 cents per quart and a store price of 17.5 cents. Consumers paid 20 cents per quart for home-delivered milk in six of the ten Illinois markets in 1949. Store milk in each of these markets was two cents per quart less than the home-delivered price.

Home-delivered prices for milk in the ten Illinois markets increased from 11.1 cents per quart in 1940 to 14.0 cents in 1945, a net increase of 2.9 cents per quart (Figure 3). Store prices to consumers in these same markets likewise increased 2.9 cents per quart in this same five-year period (Figure 4). While milk prices in all markets increased between 1940 and 1945, consumers in each Illinois market, with the exception of Chicago

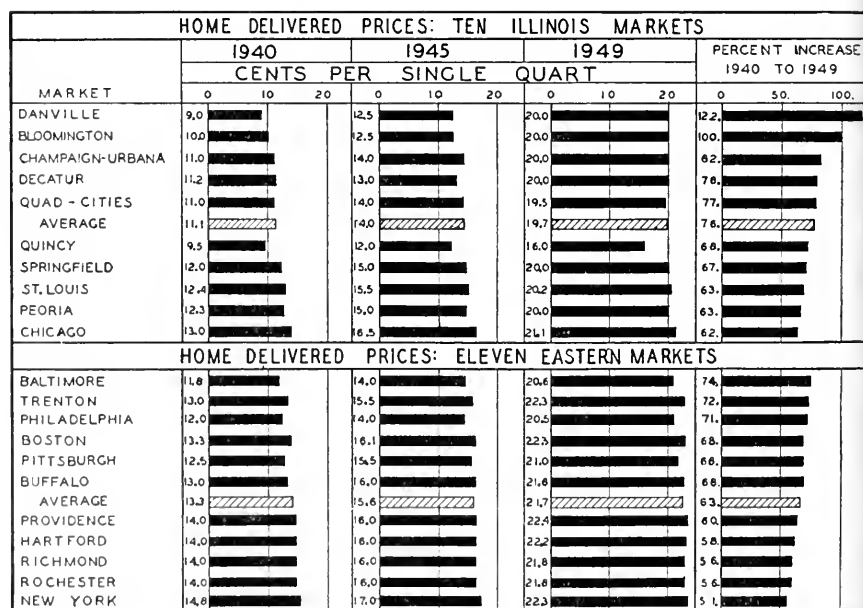


FIG. 3. — HOME-DELIVERY PRICES PAID FOR MILK BY CONSUMERS IN TEN ILLINOIS MARKETS AND ELEVEN EASTERN MARKETS, 1940, 1945, and 1949

Source: United States Department of Agriculture; Fluid Milk Reports; Monthly Reports of the Illinois Milk Producers' Association.

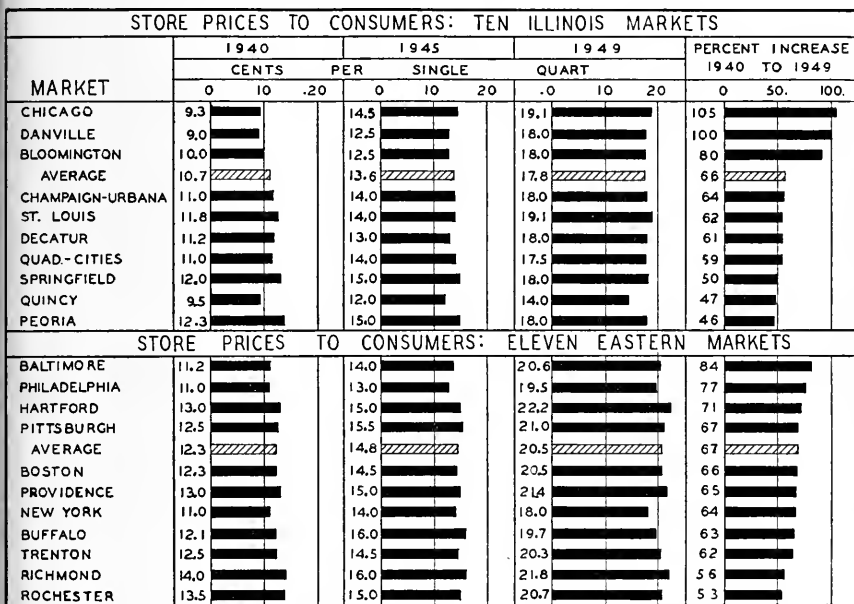


FIG. 4. — STORE PRICES PAID FOR MILK IN TEN ILLINOIS MARKETS AND ELEVEN EASTERN MARKETS, 1940, 1945, AND 1949

Source: Same as for Figure 3.

and St. Louis, paid the same price for milk whether they bought it at stores or had it delivered to their homes, in both 1940 and in 1945.

Elimination of wage and price controls resulted in sharp increases in milk prices between 1945 and 1949. Home-delivered prices in the Illinois markets increased from 14.0 cents a quart in 1945 to 19.7 cents in 1949, a net increase of 5.7 cents per quart. This compared with a 4.2 cents per quart increase in store prices in these markets during this same period.

Between 1945 and 1949, each of the eight Illinois markets which had no store differential in 1945 reduced store prices two cents per quart below home-delivered prices. This was one of the forces contributing to higher per capita sales of milk in these markets from 1945 to 1949 (Figures 1 and 2). Per capita sales in these eight markets were 14.5 percent higher in 1949 than in 1945.

Why Were Store Prices Reduced in the Smaller Illinois Markets?

The sale of milk through stores to consumers at a price two cents per quart below the home-delivered price in many Illinois markets is the direct result of Supreme Court decisions permitting intermarket shipment of grade A milk. Those decisions of the Illinois Supreme Court, Higgins

vs. City of Galesburg (1948), City of Rockford vs. Heg (1948), and Dean Milk Company vs. Waukegan (1949), have upheld the legality of this practice.¹ As a result, intermarket shipment of milk is now accepted as a usual thing in a large number of Illinois markets. The Champaign-Urbana market, for example, now regularly receives milk bottled in paper containers from Chicago, Peoria, Bloomington, and Danville, which is sold to consumers at two cents a quart below the home-delivered price. Per capita sales of milk in Champaign-Urbana in 1949 were eight percent higher than in 1947 when store and home-delivered prices were the same.

Store prices to consumers in the 11 eastern markets were 2.5 cents per quart higher and home-delivered prices 2.3 cents higher in 1945 than in 1940 (Figures 3 and 4). Between 1945 and 1949, home-delivered prices in these markets increased 6.1 cents per quart and store prices 5.7 cents per quart. In 1949, consumers in the eastern markets paid an average of 21.7 cents per quart for home-delivered milk or two cents per quart more than the average (19.7 cents) for the ten Illinois markets.

Store prices in the eastern markets averaged 20.5 cents in 1949, or 2.7 cents per quart higher than store prices in the ten Illinois markets. *One of the factors contributing to loss in sales in eastern markets in recent years (Figures 1 and 2) has been the relatively high prices charged consumers for both store and home-delivered milk.*

¹ *Illinois Farm Economics*, March 1949, pages 806 to 809, and November-December 1949, pages 930 and 931.

TABLE 2.—PER CAPITA CONSUMER INCOME IN TEN ILLINOIS MARKETS
AND IN ELEVEN EASTERN MARKETS, 1940, 1945, AND 1949

	1940	1945	1949	Percent increase 1940 to 1949
Illinois markets:				
Bloomington.....	\$749	\$1,180	\$1,994	166
Quad-Cities.....	711	1,204	1,790	152
Decatur.....	702	1,033	1,690	141
Danville.....	693	1,095	1,665	140
Quincy.....	649	990	1,551	139
Average.....	751	1,211	1,789	138
St. Louis.....	732	1,443	1,738	137
Champaign-Urbana.....	827	1,255	1,926	133
Chicago.....	803	1,383	1,867	132
Peoria.....	857	1,402	1,948	127
Springfield.....	786	1,124	1,722	119
Eleven eastern markets:				
Pittsburgh.....	738	1,165	1,764	139
Philadelphia.....	757	1,146	1,702	125
New Jersey.....	671	1,261	1,465	118
Rochester.....	771	1,184	1,662	116
Baltimore.....	751	1,490	1,626	116
New York.....	822	1,192	1,750	113
Average.....	752	1,298	1,577	110
Buffalo.....	676	994	1,412	109
Rhode Island.....	655	1,310	1,341	105
Richmond.....	805	1,658	1,607	100
Boston.....	835	1,428	1,562	87
Connecticut.....	786	1,449	1,456	85

Source: Sales Management: Survey of Effective Buying Power.

What Changes Have Taken Place in Consumer Income?

Consumer income increased from \$751 per person in 1940 to \$1,789 in 1949, a net increase of 138 percent for the ten Illinois markets (Table 2). Bloomington-Normal had the greatest increase, 166 percent, followed by the Quad-Cities, 152 percent, and Decatur, 141 percent. Per capita income in Danville was 140 percent higher in 1949 than in 1940.

In 1949, per capita consumer income of the 11 eastern markets was 21 percent higher than in 1945. This was less than half the 48 percent increase in consumer income in the ten Illinois markets in this same period. *Higher consumer income was a factor contributing to increased milk sales in Illinois markets between 1945 and 1949 when milk sales in most eastern markets were declining* (Figures 1 and 2).

What Changes Have Taken Place in the Costs Of Distributing Milk to Consumers?

The dealers' gross margin in 1949 for receiving, processing, bottling, selling, and delivery of milk in Quincy was the lowest of the ten Illinois markets both for home-delivered milk and that sold through stores (Figures 5 and 6).¹ Quincy's home-delivered margin in 1949 averaged 8.15 cents per quart, or about three cents per quart less than the ten-market average (11.10 cents). The dealers' gross margin for milk sold through stores (6.15 cents) in Quincy also averaged about three cents per quart less than the ten-market average (9.19 cents) in 1949.

Dealers' gross home-delivered margins in ten Illinois markets increased from 6.93 cents per quart in 1940 to 7.55 cents in 1945, and to 11.10 cents in 1949 (Figure 5). Thus, in 1949 the gross margin was 60 percent higher than in 1940, and 47 percent higher than in 1945. Between 1945 and 1949, the dealers' gross margin for home deliveries in 11 eastern markets increased 39 percent or considerably less than for the ten Illinois markets.

Dealers' gross margins for milk sold through stores in ten Illinois markets increased from 6.52 cents a quart in 1940 to 7.20 cents in 1945, and to 9.19 cents a quart in 1949. Store margins in 1949 were two cents a quart less in each of these markets than the margin for home deliveries.

Between 1945 and 1949 the handling margins through stores for the ten Illinois markets increased 28 percent compared with a 29 percent increase in this same five-year period in 11 eastern markets (Figure 6). *Loss in sales in the eastern markets which took place while per capita sales were increasing in the ten Illinois markets (Figures 1 and 2) thus did not*

¹ Margins are based on sales of milk in single quarts. In some markets milk for both stores and home deliveries is sold at quantity discounts. Since all dealers pay the Class I price for Class I milk, quantity discounts reduce dealers' gross margins.

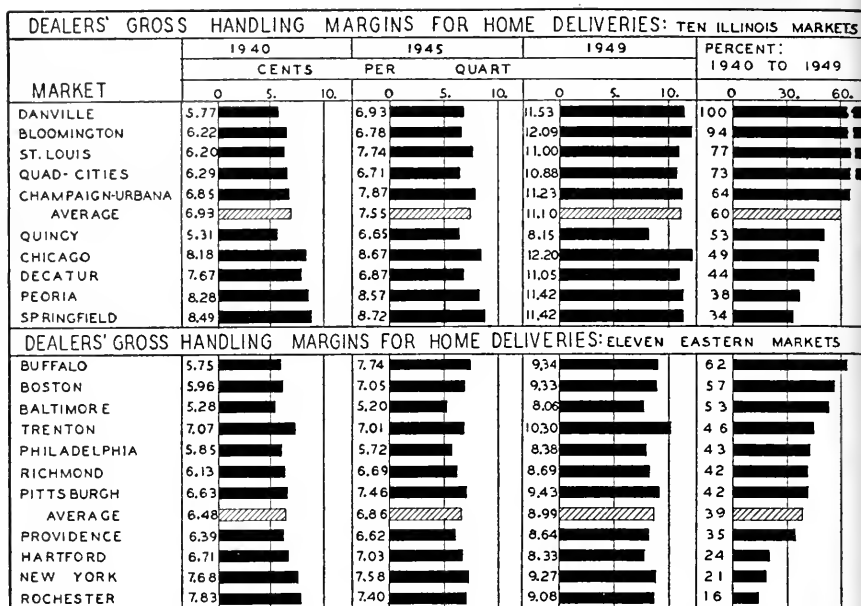


FIG. 5. — HOME-DELIVERY COSTS OF DISTRIBUTING MILK TO CONSUMERS AS MEASURED BY DEALERS' GROSS HANDLING MARGINS IN TEN ILLINOIS MARKETS AND ELEVEN EASTERN MARKETS, 1940, 1945, AND 1949

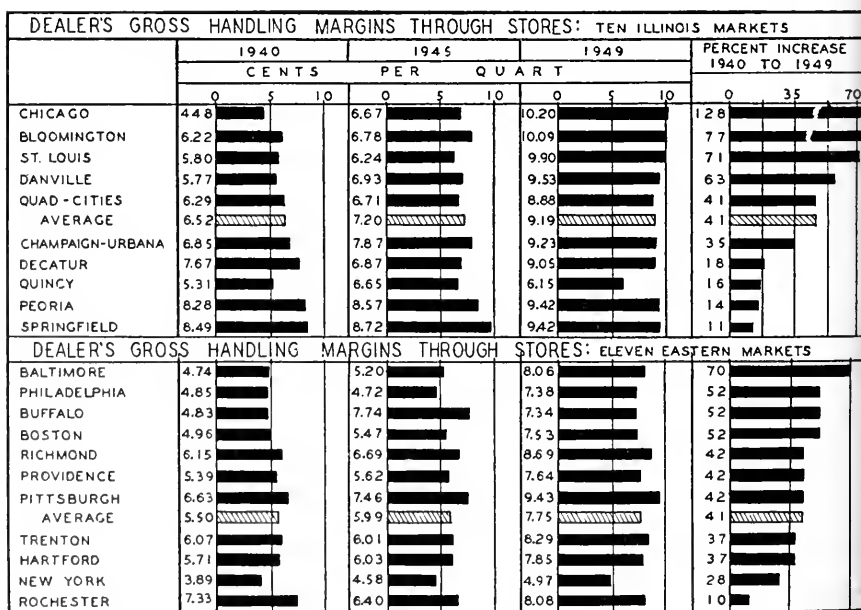


FIG. 6. — COSTS OF DISTRIBUTING MILK THROUGH STORES AS MEASURED BY DEALERS' GROSS HANDLING MARGINS IN TEN ILLINOIS MARKETS AND ELEVEN EASTERN MARKETS, 1940, 1945, AND 1949

result from greater increases in either home-delivery or store margins in the eastern markets.

Dealers' gross margins for both home-delivery and store sales were lower in the 11 eastern markets than in the ten Illinois markets. In 1949, home-delivery margins in the eastern markets averaged 8.99 cents or 2.11 cents per quart less than those (11.10 cents) in the Illinois markets. Gross store margins for the eastern markets in 1949 averaged 1.44 cents less per quart than those in the Illinois markets. New York City had the lowest gross store margin of the 21 markets in 1949 (Figure 6). This averaged 4.97 cents per quart or less than half of that for markets having the widest margins. *There is a real opportunity to lower both home-delivery and gross store margins in most Illinois markets.*

What Has Happened to Market Milk (Class I) Prices in Recent Years?

The average price for market milk (Class I) in the ten Illinois markets increased from \$1.82 per 100 pounds in 1940 to \$3.88 in 1949, a net increase of 113 percent (Table 3). Danville had a 166 percent increase in Class I price from 1940 to 1949, the largest of the ten markets. In 1940, Danville's Class I price was considerably below the ten-market average. By 1949 it had increased so that it was closely in line with prices in other Illinois markets.

TABLE 3.—MARKET MILK (CLASS I) PRICES PAID TO PRODUCERS FOR 3.5 PERCENT MILK F.O.B. THE MARKETS, TEN ILLINOIS MARKETS AND ELEVEN EASTERN MARKETS, 1940, 1945, AND 1949

	1940	1945	1949	Percent increase 1940 to 1949
(price per 100 pounds)				
Illinois markets:				
Danville.....	\$1.42	\$2.45	\$3.78	166
Decatur.....	1.56	2.75	4.02	158
Springfield.....	1.54	2.84	3.86	151
Peoria.....	1.77	2.89	3.85	118
Champaign-Urbana.....	1.84	2.79	3.96	115
Bloomington.....	1.66	2.52	3.53	113
Average.....	1.82	2.91	3.88	113
St. Louis.....	2.24	3.53	4.28	91
Quincy.....	1.86	2.47	3.55	91
Chicago.....	2.19	3.59	4.10	87
Quad-Cities.....	2.10	3.29	3.86	84
Eleven eastern markets:				
Rochester.....	2.77	3.88	5.70	106
Baltimore.....	2.72	3.85	5.57	105
Pittsburgh.....	2.65	3.66	5.38	103
Hartford.....	3.23	4.05	6.46	100
Philadelphia.....	2.78	3.71	5.33	92
Trenton.....	2.85	3.83	5.41	90
Average.....	3.05	3.95	5.78	90
Boston.....	3.15	3.96	5.82	85
New York.....	3.23	4.34	5.98	85
Providence.....	3.42	4.11	6.26	83
Richmond.....	3.46	4.25	5.99	73
Buffalo.....	3.31	3.80	5.70	72

Source: Data for Illinois markets except Chicago and St. Louis from Illinois Milk Producer Associations' monthly reports. Other markets from United States Department of Agriculture; Fluid Milk Reports. Chicago prices in 70 mile zone adjusted to f.o.b. city.

Decatur ranked second with a 158 percent increase and Springfield third with a 151 percent increase in price of market (Class I) milk between 1940 and 1949.

A grade A program has been introduced into most of the smaller Illinois markets since 1940. This is one reason why prices in these markets have increased more than in markets such as Chicago and St. Louis which had grade A programs before 1940.

In 1940, the average market-milk price in 11 eastern markets averaged \$1.23 per 100 pounds above that of the ten Illinois markets; in 1945, it averaged \$1.04 higher; and in 1949, \$1.90 per 100 pounds higher. *Class I prices in many eastern markets have been maintained at an unnecessarily high level during the past two years* (Figure 1). This is indicated by very sharp increases in production as related to sales. Thus, in three federal order markets (New York, Boston, and Philadelphia) milk production in 1948 was 78 percent above Class I sales, in 1949, 99 percent, and in the first six months of 1950, 129 percent more than the volume of milk sold as market milk.

Normally, October, November, and December have been the months of least surplus in these markets. In 1948, total production in these three months was 51 percent above Class I sales, in 1949, 79 percent, and in 1950 it will be around 94 percent above Class I sales in these months, if milk production and sales continue on a basis comparable to the first six months of 1950.

Excessively high Class I prices in recent years have been one of the factors causing decreased per capita sales of milk in eastern markets (Figures 1 and 2) during a period when these sales in most Illinois markets increased substantially.

R. W. BARTLETT and W. E. COLLINS

DOES IT PAY TO GROW GRASS AND LEGUMES?

Just about any way you look at it, you'll gain by keeping at least 25 percent of your cropland in legume-grass mixtures, if you are in a position to market some of these roughages through livestock.

You can expect:

The largest net farm earnings.

The highest rate of return on investment.

Higher crop yields.

Almost the same total grain production on fewer acres.

More total digestible nutrients per acre.

These facts showed up from a study of 67 farms in 14 counties west

of the Chicago dairy area for the seven years 1943-49. In general, all 67 farms were similar as to soil fertility, but they differed widely in the share of cropland in legume-grass crops.

Within the group, 31 farms kept less than 20 percent of their cropland in stand-over legumes, 26 farms kept 20 to 30 percent, and 10 farms kept over 30 percent in legumes. These three groups averaged 13, 26, and 39 percent respectively of tillable land in hay and pasture crops. The average soil productivity rating was 2.0, 2.1, and 2.4 respectively, rated on a scale of one as most fertile and ten as poorest.

Notice on Fig. 1 how different the three groups were in percent of tillable land in major crops for 1947-49. And what results did these men get by making such different use of similar quality land?

First of all, corn yields were 12 bushels larger and oat yields 13 bushels larger on high-legume as compared with low-legume farms. Notice too, how much of this increase showed up between the less-than-20 percent legume farms and the 20-to-30 percent group. After all, would not you expect higher yields since legumes are soil builders?

But it is the total bushels produced per farm and not the yield per acre that is most important. So the question is: How far can a farmer go in substituting hay and pasture for grain and still keep the same or larger total production?

Figure 1 shows almost the same total grain production on the first two groups of farms — 2,513 and 2,504 pounds. But it took 87 percent of the cropland to produce this output on the less-than-20 percent legume farms, and only 74 percent of the cropland on the 20-to-30 percent farms. *Our second gain then — higher yields resulted in almost the same total grain production on 15 percent fewer acres.*

A third benefit — the extra legume acres in the 20-to-30 percent group not only helped to produce higher grain yields, but also produced 407 more pounds of hay and pasture per tillable acre. Pasture production was measured by assuming 20 pounds of hay equivalent actually eaten per animal-unit per pasture day.

So far, we have talked about the first two groups of farms. Now, how about the more-than-30 percent group? Were grain yields enough higher to offset the smaller acreage in grain? Chart I gives us the answer — 2,225 pounds of grain compared to 2,510 pounds per acre. But look how much more hay and pasture were grown on the highest-legume group.

It takes about 1½ pounds of hay and pasture to equal one pound of grain in total digestible nutrients. On this basis, total production in pounds of TDN would be 2,828 pounds, 3,101 pounds, and 3,388 pounds respectively.

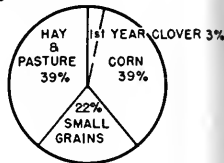
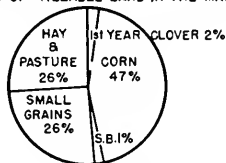
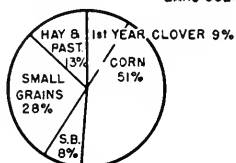
The fourth benefit then — total digestible nutrients from grain, hay, and pasture combined are progressively higher with larger legume acreage.

THIRTY-ONE FARMS KEPT LESS THAN 20% OF THEIR TILLABLE LAND IN BIENNIAL AND PERENNIAL LEGUMES.

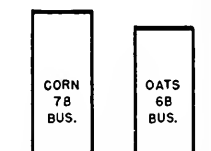
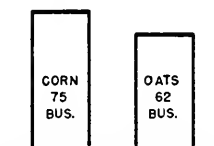
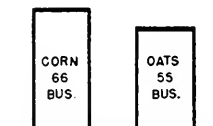
TWENTY-SIX FARMS KEPT FROM 20.0 TO 29.9% OF THEIR TILLABLE LAND IN THESE LEGUMES.

TEN FARMS KEPT 30% OR MORE OF THEIR TILLABLE LAND IN BIENNIAL AND PERENNIAL LEGUMES

LAND USE: PERCENT OF TILLABLE LAND IN THE MAJOR CROPS



CROP YIELDS: BUSHELS PER ACRE



CROP PRODUCTION: POUNDS OF GRAIN AND HAY PRODUCED, AND DRY WEIGHT OF PASTURE USED, FOR EACH TILLABLE ACRE.

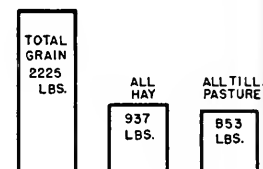
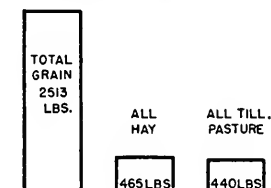
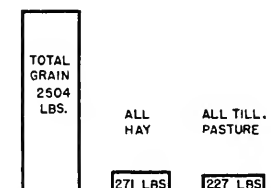


FIG. 1. — LAND USE, CROP YIELD AND CROP PRODUCTION DATA ON FARMS WITH SOILS RATING FROM 1.0 TO 2.9 IN THE ILLINOIS VALLEY AND BLACKHAWK F. B. F. M. SERVICE AREAS. AVERAGES FOR THE YEARS 1947, '48 AND '49. ALL FARMS FOLLOWED THE SAME LAND USE PROGRAM IN THE PRECEDING FOUR YEARS, 1943-46, AS THEY FOLLOWED IN THE THREE YEARS, 1947-49

So far, we have talked about production — bushels and pounds. But what about value — \$\$\$\$? Let's look at Fig. 1A.

There is very little difference in gross value of all crops per tillable acre among the three systems. But let us compare costs and net returns to show the true profitability of each system.

When we do, the rate earned on investment and net returns per acre are highest on the 20-to-30 percent legume farms. Going beyond 30 percent in legumes on the better corn-belt soils in these 14 counties apparently cuts net earnings pretty fast. This is probably due, in part at least, to high costs for labor, equipment, buildings, fences, etc., needed by livestock to market legumes effectively.

In comparing returns, cash grain was valued at actual sales prices, and grain fed to livestock at average Illinois farm prices. Hay was valued at similar figures. Pasture was figured at 12 cents per animal-unit day.

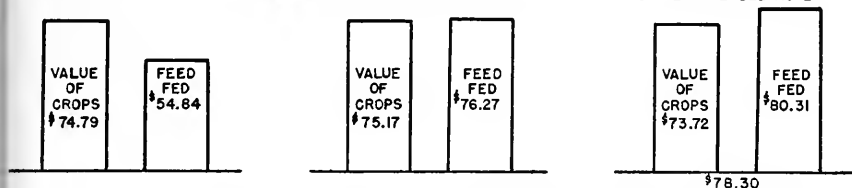
Despite what we have said, a few men following the high- or low-

THIRTY-ONE FARMS THAT KEPT LESS THAN 20% OF THEIR TILLABLE LAND IN BIENNIAL & PERENNIAL LEGUMES.

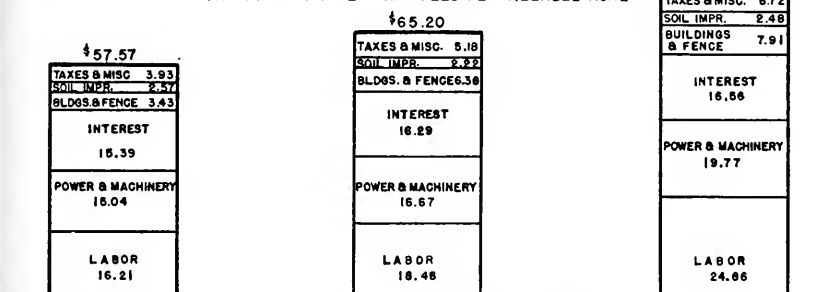
TWENTY-SIX FARMS THAT KEPT FROM 20.0 TO 29.9% OF THEIR TILLABLE LAND IN THESE LEGUMES.

TEN FARMS THAT KEPT 30% OR MORE OF THEIR TILLABLE LAND IN BIENNIAL AND PERENNIAL LEGUMES.

GROSS VALUE OF CROPS PRODUCED & VALUE OF FEED FED PER TILLABLE ACRE



FARM INPUTS OTHER THAN FEED PER TILLABLE ACRE



RATE EARNED ON THE TOTAL INVESTMENT
 RETURNS TO CAPITAL AND MANAGEMENT PER TILLABLE ACRE

Group	Rate Earned	Returns to Capital & Management
Less than 20% legumes	19.37%	\$57.58
20.0 to 29.9% legumes	21.17%	\$66.85
30% or more legumes	14.96%	\$48.04

FIG. 1A.—INPUTS AND RETURNS ON FARMS WITH DIFFERENT LAND USE, BUT SOILS RATING FROM 1.0 TO 2.9 IN THE ILLINOIS VALLEY AND BLACKHAWK F. B. F. M. SERVICE AREAS. AVERAGES FOR THE YEARS 1947, '48 AND '49. ALL FARMS FOLLOWED THE SAME LAND USE PROGRAM IN THE PRECEDING FOUR YEARS, 1943-46, AS THEY FOLLOWED IN THE THREE YEARS, 1947-49

legume systems found it most profitable to do so. However, this is due in all likelihood to special conditions or to "know-how" which they developed to earn the most profit from their particular system. Most Illinois farmers have a fairly wide choice in the type of farming they can follow, and it is up to the individual to determine the most profitable program for his particular situation.

Differences in earnings merely emphasize the importance of studying your results from your own program and comparing them with results of other farmers on similar farms using different programs.

Incidentally, the main soil types on our 67 sample farms would correspond to Flanagan, Drummer, Muscatine, Sable, Lisbon, Saybrook, Ipava, Hartsburg, and Bolivia. If your soil is mainly of these or similar types, you may be able to apply these findings profitably.

TABLE 1.—AVERAGE LAND USE, CROP YIELDS, PRODUCTION, COSTS AND RETURN FOR THE PERIOD 1947-1949 ON FARMS WITH SOILS RATED FROM 1.0 TO 2.9, FARMS THAT WERE OPERATED UNDER TWO DIFFERENT LEVELS OF LAND USE AND DIFFERENT AMOUNTS OF LIVESTOCK UNDER EACH LAND-USE PROGRAM^a

Items	Farms that kept less than 20 percent of their tillable land in biennial or perennial legumes		Farms that kept 20-29 percent of their tillable land in biennial and perennial legumes	
	Farms that fed less than \$30.00 feed per acre in 1943-45	Farms that fed more than \$30.00 feed per acre in 1943-45	Farms that fed less than \$45.00 feed per acre in 1943-45	Farms that fed more than \$45.00 feed per acre in 1943-45
Number of farms.....	16	15	13	13
Average soil rating.....	1.8	2.2	2.0	2.1
Tillable acres per farm.....	281	271	206	209
Feed fed per tillable acre.....	\$17.96	\$95.68	\$49.75	\$102.58
<i>Percent of tillable land in:</i>				
Corn and soybeans.....	59	57	47	50
Small grains.....	29	27	28	25
Hay and pasture.....	12	15	25	25
First-year clover ^b	10	7	4	1
<i>Crop yields:</i>				
Corn, bushels per acre.....	64	67	74	76
Oats, bushels per acre.....	52	60	62	63
<i>Production per tillable acre:</i>				
All grains, pounds.....	2,442	2,575	2,455	2,567
Hay and pasture, pounds.....	371	651	901	933
Grain equivalent, pounds.....	2,683	2,998	3,041	3,173
Crop returns per tillable acre.....	\$70.78	\$79.28	\$76.16	\$74.16
Total nonfeed inputs (costs) per tillable acre....	47.40	68.81	64.39	66.00
Rate earned on the investment.....	18.64	20.08	19.37	22.89
Net earnings per tillable acre.....	48.56	67.71	60.00	73.62

^a All farms were in north-central Illinois, and all farms maintained a consistent land-use program throughout the seven-year period. The data in the table are averages for the years 1947-1949, but the farms were grouped according to the amount of feed fed in the years 1943-1945.

^b This acreage is double-cropped and is included in the corn acreage as the major land use for the year.

Now let us consider the part livestock play in a soil fertility program using legumes. This study was not designed to answer that question, but Table 1 gives us some helpful information. The less-than-20 percent farms and the 20-to-30 percent group were both divided according to value of feed fed in the first three years (1943-45) of the seven-year period (1943-49).

The table apparently shows that farmers in this area got greater yields from a legume and moderate livestock system than from an intensive livestock system with a minimum of hay and pasture.

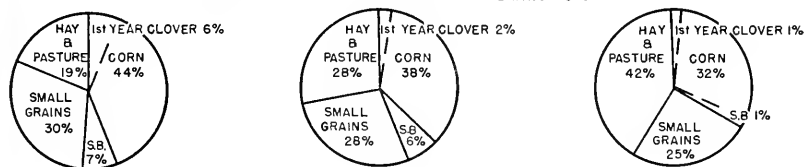
On grain farms (those with least legumes), corn yielded 64 bushels an acre, compared to 67 bushels on low-legume livestock farms. But compare that 67 bushels on intensive livestock farms (\$95.68 feed fed per tillable acre and 15 percent in legumes) to the 74 bushel corn yield on combined

EIGHT FARMS KEPT LESS THAN 20% OF THEIR TILLABLE LAND IN BIENNIAL AND PERENNIAL LEGUMES.

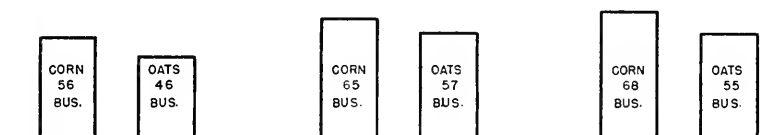
SEVENTEEN FARMS KEPT FROM 20.0% TO 29.9% OF THEIR TILLABLE LAND IN THESE LEGUMES.

NINETEEN FARMS KEPT 30% OR MORE OF THEIR TILLABLE LAND IN BIENNIAL AND PERENNIAL LEGUMES.

LAND USE: PERCENT OF TILLABLE LAND IN THE MAJOR CROPS



CROP YIELDS: BUSHELS PER ACRE



CROP PRODUCTION: POUNDS OF GRAIN AND HAY PRODUCED, AND DRY WEIGHT OF PASTURE USED, FOR EACH TILLABLE ACRE

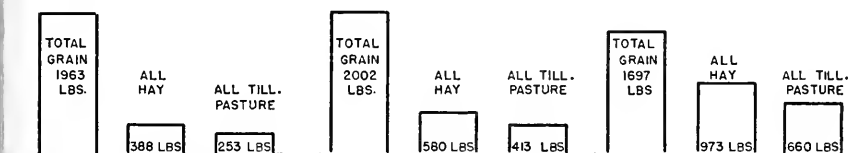


FIG. 2.—LAND USE, CROP YIELD AND CROP PRODUCTION DATA ON FARMS WITH SOILS RATING FROM 3.0 TO 4.9 IN THE ILLINOIS VALLEY AND BLACKHAWK F. B. F. M. SERVICE AREAS. AVERAGES FOR THE YEARS 1947, '48 AND '49. ALL FARMS FOLLOWED THE SAME LAND USE PROGRAM IN THE PRECEDING FOUR YEARS, 1943-46, AS THEY FOLLOWED IN THE THREE YEARS, 1947-49

moderate livestock and legume farms (\$49.75 feed fed per tillable acre and 25 percent of tillable land in legume-grass crops).

The highest yields and also highest earnings were made on farms that combined legumes and livestock. But the evidence points toward a greater increase in crop yields from a good land-use program than from manure without enough legumes in the rotation. We do not know how the manure was handled on these farms, but it is reasonable to assume that with more tillable pasture, more manure was saved and used efficiently than under drylot feeding.

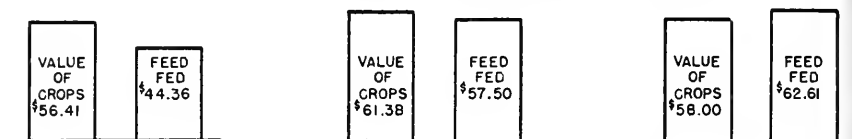
So far, we have considered only farms on the better soils. Now what about farms on poorer soils, ranging from 3.0 to 4.9? We find almost exactly the same picture. Figs. 2 and 2A, for 44 farms in the same 14 counties, but on poorer soils (3.0 to 4.9) show the same five advantages of keeping about one-fourth of your land in legume-grass mixtures:

Largest net farm earnings.

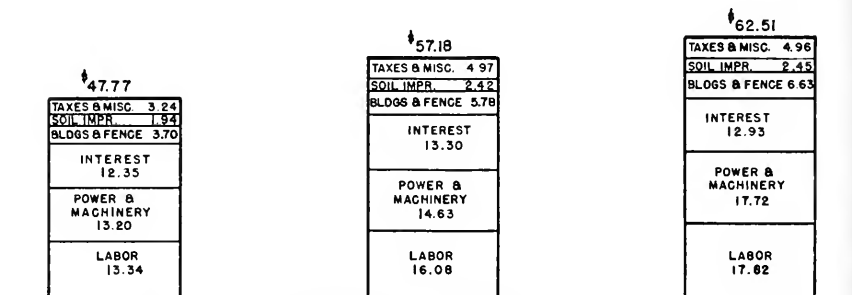
Highest rate of return on investment.

EIGHT FARMS THAT KEPT LESS THAN 20% OF THEIR TILLABLE LAND IN BIENNIAL & PERENNIAL LEGUMES SEVENTEEN FARMS THAT KEPT FROM 20.0 TO 29.9% OF THEIR TILLABLE LAND IN THESE LEGUMES NINETEEN FARMS THAT KEPT 30% OR MORE OF THEIR TILLABLE LAND IN BIENNIAL & PERENNIAL LEGUMES

GROSS VALUE OF CROPS PRODUCED AND VALUE OF FEED FED PER TILLABLE ACRE



TOTAL FARM INPUTS OTHER THAN FEED PER TILLABLE ACRE



RATE EARNED ON THE TOTAL INVESTMENT

13.34% 18.43% 17.69%
 RETURNS TO CAPITAL AND MANAGEMENT PER TILLABLE ACRE
 \$36.14 \$47.90 \$45.28

FIG. 2A.—INPUTS AND RETURNS ON FARMS WITH DIFFERENT LAND USE, BUT SOILS RATING FROM 3.0 TO 4.9 IN THE ILLINOIS VALLEY AND BLACKHAWK F. B. F. M. SERVICE AREAS. AVERAGES FOR THE YEARS 1947, '48 AND '49. ALL FARMS FOLLOWED THE SAME LAND USE PROGRAM IN THE PRECEDING FOUR YEARS, 1943-46, AS THEY FOLLOWED IN THE THREE YEARS, 1947-49

Higher crop yields.

Larger total production (grain equivalent) per tillable acre.

More total digestible nutrients per acre.

As you would expect on poorer soils, the main difference is that it apparently remained almost as profitable to keep land in legume-grass crops well beyond the 30 percent level. Here is the evidence:

	1.0 to 2.9 soils		3.0 to 4.9 soils	
	20-to-30 percent farms	Farms over 30 percent	20-to-30 percent farms	Farms over 30 percent
Rate of return.....	21.17%	14.96%	18.43%	17.79%
Net returns.....	\$66.85	\$48.04	\$47.90	\$45.28

We see that net earnings and rate of return dropped only slightly but not significantly on poorer soils when legumes took more than 30 percent of the acreage. But they dropped off sharply on the better soils.

In summary then, our study of 67 farms in 14 counties west of the Chicago dairy area for the seven years 1943-49 shows:

On the better, level corn-belt soils:

1. Net earnings per tillable acre and rate earned on total investment were highest on farms that kept about one-fourth of tillable land in legume hay and pasture crops.
2. Grain yields and total feed production went up as the proportion of stand-over legumes in the rotation went up.
3. The contribution of legumes to better soil tilth, organic matter, and plant food apparently was more effective in getting top grain yields than the contribution of livestock with only small legume acreage.
4. Top yields, production, and returns came from a combination of plenty of livestock and a cropping system that kept one-fourth of tillable land in legume hay and pasture.

On medium soils with some erosion hazard:

1. It evidently remained most profitable to keep one-fourth of tillable land in hay and pasture and quite profitable up to one-third or two-fifths.
2. Grain yields and total feed production increased as the share of tillable land in legume crops increased.

All told, you can hardly go wrong by keeping at least one-fourth of your land in legumes at all times, maybe more, and keeping enough livestock to use that feed to best advantage.

F. J. REISS

WHERE SHOULD ILLINOIS FARMERS SELL HOGS?

Over twenty-two percent of the Illinois cash farm income of \$1,708,847,000 in 1949 was from the sale of hogs. Over two-thirds of the farms in the state sell hogs each year. So an answer to the question "Where should Illinois farmers sell hogs?" is important. The obvious answer is where they will net the farmer the most money. With this as a premise let us look at the factors he needs to consider when choosing a market.

Price as a factor in choosing markets. Price is an indication of what market interests are willing to pay for hogs. In checking price to make comparison certain things need to be considered. Too frequently top price is used in comparing markets. This is not desirable in many cases because the farmer is not selling hogs that would bring the top. Another common method of comparison is to use average prices for all hogs. The following

illustrates the need for comparing specific prices for the particular hogs a person has to sell when comparing markets.

	Chicago	National Stockyards
Top price July 21, 1950.....	\$24.50	\$24.75
Average price July 21, 1950.....	23.62	22.08
Average price for week.....	23.33	23.51
Average weight July 21, 1950.....	238 pounds	199 pounds
Average weight for week.....	240 pounds	210 pounds
Price July 21, 180-200 pounds.....	23.50-24.50	24.25-24.75
Price July 21, 220-240 pounds.....	23.50-24.50	24.25-24.75
Price July 21, 240-270 pounds.....	22.75-23.75	23.25-24.50

Another factor in comparing prices is net return. One market may have a lower price than another but marketing costs: trucking, selling expense, etc., may be enough lower to offset this factor.

Price is only one item in the equation of value. The other item is weight. Weight times price gives gross returns. Indications are that most of the shrink occurs in the first 25 miles of the haul.

But assuming price is comparable at the markets being considered. Figures 1 and 2 are of interest. Assuming 61 cents a hundred differential for various costs on the 180-200 pound hogs it is evident the local market was frequently a better market than market number 1 and assuming

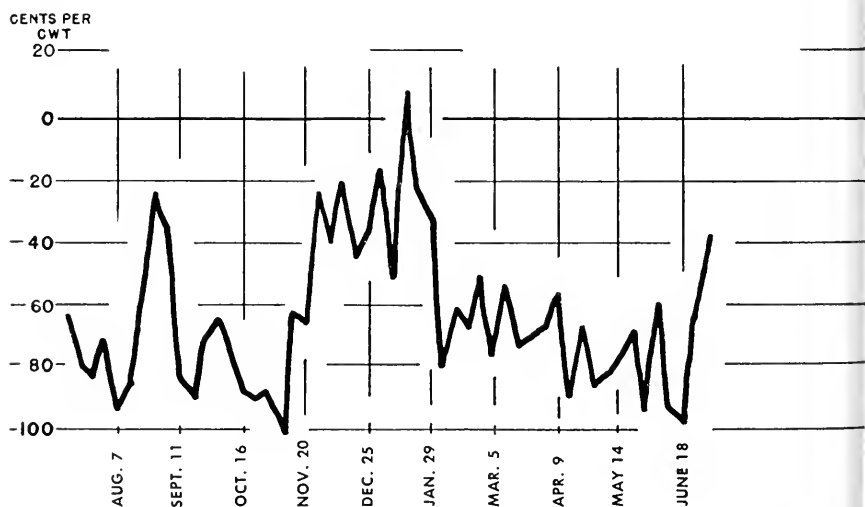


FIG. 1. — WEEKLY DEVIATIONS OF PRICES AT A LOCAL MARKET FROM PRICES AT A TERMINAL MARKET, 180-200 LB. HOGS, JULY 10, 1948 TO JULY 2, 1949

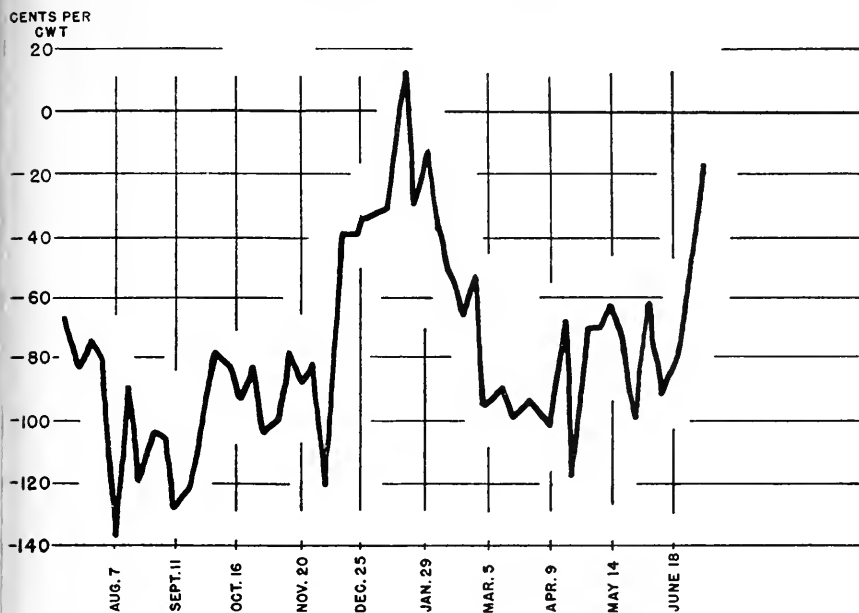


FIG. 2. — WEEKLY DEVIATIONS OF PRICES AT A LOCAL MARKET FROM PRICES AT A TERMINAL MARKET, 240-270 LB. HOGS, JULY 10, 1948 TO JULY 2, 1949

55 cents a hundred differential for various costs on the 240-270 pound group it is evident the local market was seldom the best outlet for these heavier hogs.

This illustrates two important principles in choosing a hog market.

1. Market relationships change over time; so frequent market comparisons are essential to know which is the better outlet.

2. While one market may offer the best price for hogs of a given weight it does not necessarily offer the best outlet for hogs of all weights.

To further understand this difference between markets an analysis was made of buyers at a local market. Four large firms purchased 72 percent and 16 smaller firms 28 percent of the 190-200 pound hogs and the same four large firms purchased 83 percent of the 250-259 pound hogs while 15 smaller firms purchased 17 percent. This indicates the number of firms wanting hogs of a specific weight may be a factor in price. The smaller buyers of the heavier hogs apparently did not have the same eagerness to buy as the smaller firms buying the lighter hogs. Figure 3 shows the percent of purchases by specified packers that were in various weight groups. Packers 1, 2, and 3 accounted for 59 percent of the hogs and

nearly 70 percent of the sows. Packers 4 and 5 wanted only certain types of hogs and were willing to pay for them.

Thus, it is important to know not only how many buyers are on the market, but how many buyers are on the market for the type hogs a farmer has for sale and to what extent they need the hogs.

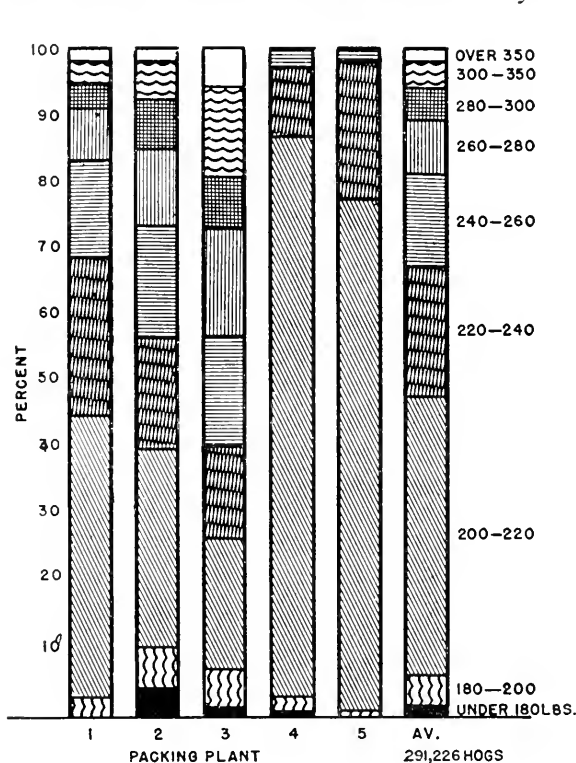


FIG. 3.—PERCENT OF VARIOUS PACKERS TOTAL PURCHASES FROM AN ILLINOIS MARKET IN SPECIFIED WEIGHT GROUPS, JANUARY-JUNE, 1949

Another factor that may partly explain this difference in price relationships is that the local market hogs were sorted fairly "close," so 250-260 pound hogs meant just that, while the terminal market hogs were not sorted to such an extent and many lighter hogs would be included in the 240-270 pound drafts.

Time as a factor in choosing a market. In comparing prices between markets they are usually compared day by day. But this may not be the farmer's choice. He may have the choice of selling on one market today or on a more distant market 1 or 2 days from now.

This then brings in the question of price change. To what extent is it better to have a sure price today or take a chance on what the price will be tomorrow. While studies made by the Chicago Union Stockyard Company indicate that the market is steady or higher from 50 to 55 percent of the time and on another 20 to 25 percent of the days lower by not more than one percent, there is still the chance that hog prices will go down tomorrow and this has been a factor in choosing a market.

Other considerations. In choosing a market one needs to know how

his hogs will be sorted. For example, on a market one day in December 1949 the following cases were observed:

Lot no.	Actual				If sold in one lot		
	Number	Weight	Sales price	Total value	Average weight	Sales price	Total value
1	5	228	\$15.00	\$190.74	213	\$15.50	\$198.40
	1	140	14.10				
2	15	221	15.10	689.45	218	15.50	709.90
	2	265	14.30				
	4	185	15.25				
3	6	200	15.50	211.67	196	15.25	208.93
	1	170	15.10				

By referring back to Figures 1 and 2 it is possible to see that although one market might offer a better price on certain weights the net receipts on the total shipment, not on just part of it, is the important thing.

Another point to consider is what to do about small lots of hogs. If a farmer has only 5 or 6 hogs to sell his market outlet may be selected for him by the other farmers of the area. If he wishes to sell at a nearby market he can usually hire a pickup truck to haul them. But if he wishes to sell at a market 100 miles away and no one else wants to sell there he has little choice but to sell where transportation is available at a reasonable cost.

W. J. WILLS

Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. ⁹ Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. ¹⁰ Federal Reserve Bulletin of Federal Reserve Board. ¹¹ Preliminary estimate. ¹² Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹³ Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.



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TABLE A.—INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ^a	Weekly wages, all manufacturing industries, unadjusted ^b	Industrial production
	Wholesale prices		Illinois farm prices ^a	Prices paid by farmers ^a	U. S. in money ^a	Illinois				
	All commodities ¹	Farm products ²				In money ^a	In purchasing power ²			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-39
1934.....	93	86	76	96	79	68	71	80	68	75
1935.....	99	104	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	306	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	247	275	207	383	392	189	303	351	192
1949.....	192	218	218	200	343	346	176	308	325	176
1949 Aug....	190	214	216	199	385	343	172	301	323	170
Sept.....	190	215	219	198	440	356	180	302	335	174
Oct.....	189	210	213	196	505	559	285	299	321	166
Nov.....	188	206	207	196	435	367	187	302	314	173
Dec.....	188	204	202	196	371	333	170	307	329	179
1950 Jan....	188	204	201	199	337	379	190	314	329	183
Feb.....	190	209	209	198	240	307	155	320	330	180
Mar.....	190	210	209	200	247	325	163	327	334	187
Apr.....	190	210	213	200	232	258	129	319	337	190
May.....	193	217	226	203	266	332	163	319	348	195
June.....	195	218	226	204	275	285	140	323	362	199
July.....	202	232	241	204	353	393	193	326	367	196
Aug.....	206	234	240	206	385	344	167	330	...	207

TABLE B.—PRICES OF ILLINOIS FARM PRODUCTS¹

Product	Calendar year average			Oct. 1949	Current months, 1950		
	1935-39	1948	1949		Aug.	Sept.	Oct.
Corn, bu.....	\$.66	\$1.89	\$1.17	\$1.06	\$1.42	\$1.43	\$1.39
Oats, bu.....	.31	.94	.64	.61	.70	.73	.73
Wheat, bu.....	.86	2.23	1.95	1.87	2.03	2.01	1.95
Barley, bu.....	.62	1.58	1.07	1.04	1.28	1.27	1.27
Soybeans, bu.....	.90	3.20	2.19	2.12	2.42	2.30	2.06
Hogs, cwt.....	8.52	23.71	18.58	17.50	21.00	20.90	19.20
Beef cattle, cwt.....	7.88	24.77	21.36	21.00	25.90	26.50	25.40
Lambs, cwt.....	8.36	23.44	23.36	22.10	24.90	26.10	25.50
Milk cows, head.....	58.00	194.17	198.33	190.00	225.00	225.00	220.00
Veal calves, cwt.....	8.66	26.29	25.16	23.50	28.70	29.50	29.30
Sheep, cwt.....	3.58	8.93	8.70	7.80	9.00	10.50	11.90
Butterfat, lb.....	.27	.73	.58	.58	.56	.57	.60
Milk, cwt.....	1.68	4.48	3.45	3.55	3.25	3.45	3.65
Eggs, doz.....	.19	.40	.40	.45	.30	.33	.30
Chickens, lb.....	.15	.30	.27	.23	.26	.24	.22
Wool, lb.....	.25	.42	.42	.42	.52	.53	.50
Apples, bu.....	1.08	2.33	2.38	1.30	2.30	2.45	1.95
Hay, ton ¹	9.39	20.64	22.68	22.00	19.40	19.60	20.50

¹⁻¹³ For sources of data in tables see preceding page.

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EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS

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Articles in This Issue

	PAGE
Still More Inflation? — E. J. WORKING and G. L. JORDAN.....	1097
Safety Precautions for Illinois Farmers Shipping Livestock by Truck — W. J. WILLS and N. G. P. KRAUSZ.....	1102
Does Sweden Have the Answer to Soil Conservation? — D. E. LINDSTROM.....	1104
Some Comments on the Importance of a Market With Special Reference to Three War-Expanded Commodities—L. J. NORTON..	1107

STILL MORE INFLATION?

Events in the Korean War and in the "cold" war between communist and noncommunist forces have moved rapidly in recent weeks. Our President has declared a national emergency in order to hasten preparedness for possible large scale warfare, and the present prospect is for a very rapid increase of defense expenditures. Total expenditures of the federal government now seem likely to be increased to around 65 or 70 billion dollars or more in the calendar year of 1951 compared with about 44 billion in 1950. What do all these things mean as to price prospects and as to what should be our price policies?

Prepare for 25 years of war. The seriousness of the present situation should not be overlooked. This is a struggle between two powerful groups of nations—the christian democratic groups and the communist dictatorship group. The former would seem to have a long-time advantage but at present our friends in western Europe have not recovered from the destruction of World War II. It is essential that they become strong and that we retain their friendship. The first and primary aim of Russia is to strengthen herself by building up a protecting row of satellite countries around her to prevent invasion by unfriendly powers, then to carry out the old, old expansionist program that originated long before Stalin was born. It aimed specifically at the control of the Baltic and an outlet through the Mediterranean and finally to increase her resources particularly of oil and steel. The ultimate aim is to dominate the earth.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

Stalin and his gang have three assets. The first is a false but powerful idea which he can dangle before his followers. It is that communism, through Moscow leadership, will improve the lot of the common man — and the common man in eastern Europe, Asia, and many other sections of the world ekes out a bare existence and no more. There are millions of people who feel that they have little to lose and something to gain. The promises of “liberation” from the more fortunate “capitalists” attract followers by the tens of millions and their zeal is sometimes comparable to that of a devout religious group (although there is nothing religious about their doctrine). For many of them this goal takes the place of a religion. The second asset is large material resources, which have been only partially developed. The third is a kind of shrewdness or cunning, which being free from ethical restrictions enables Stalin to out-manuever western political leaders whose constituencies would not tolerate strategies which appeared to be contrary to Christian ethics. In the end the third “asset” may turn out to be a liability.

Under these circumstances we may look for a long struggle but must be prepared for the possibility of another world war breaking out with terrific violence at any time. The victory in a long struggle goes to the group which is and remains the stronger. Therefore, our goal must be *efficient production*, efficient production not only in 1951 and 1952 but also in 1960 and 1975. We cannot afford to waste our resources, particularly those which are irreplaceable. We cannot afford to mine our land to produce bumper crops for two or three years without maintaining their productivity over a 25-year period. The government cannot afford to establish controls which will interfere with the production of essential goods and services either in 1951 or in later years. Neither can we afford to use manpower for regulatory work unless that is more productive than the use of the manpower in some other kind of work. The methods used to finance the war effort must contribute to the efficiency of production and to the most economical use of output for five, ten, or 25 years.

If World War III should break out, we shall have full scale mobilization with little opportunity to conserve strength or resources. But planning for a long struggle will prevent the fatal mistake of dissipating our strength.

Inflation invites disaster. It is of utmost importance that we avoid any large amount of inflation. Our entire system of individual initiative and private enterprise depends upon the major part of our economic life being directed by *competition*, operating through prices. The relationships between prices of different products direct both production and consumption. Changes in the relationships redirect production and consumption.

Any rapid change in the general level of prices — either inflation or deflation — soon destroys the effectiveness of the price system to direct production and consumption. Some prices of our system change readily in response to changed conditions of supply and demand. Other prices change more slowly — indeed some prices based upon long-term contracts (including mortgages, bond agreements and life insurance contracts) do not change at all during the entire life of the contract. Hence, changes in price levels result in serious price disparities.

In periods of deflation the misdirection of resource use results in a spasm of underproduction in many sections of the economy.

In periods of inflation the disparities of the price system result in a squandering of precious — and sometimes irreplaceable — resources in inefficient production processes and in uneconomic consumption. Competition no longer drives out the inefficient and wasteful producer. It no longer holds in check, and turns to the advantage of the general welfare, the greed of those who seek to maximize their profits. Inflation encourages making of profits by trading rather than by production. The long-time effects are detrimental to the welfare of the nation, including farmers.

Do we need direct price controls? Beyond doubt, prices must not be allowed to get out of control. But do we need to have general and direct control of prices by the government? Do we need price controls of the type we had during and immediately following World War II? Such a system cannot stop with controls for commodity prices. It must include wage rate controls and rationing as well.

Our answers to the above questions and our national policy as to price control should be based on an understanding of the causes of price inflation as well as upon an appreciation of its bad effects.

Some people have considered the price increases of the past six months as the natural result of war — and as inevitable in the absence of direct price controls. Some others have been perplexed that there should have been so great a rise in prices when the federal government was not spending beyond its income. Both groups are likely to conclude that the only way to prevent further inflation is to impose direct price controls. There is, nevertheless, firm ground for the belief that inflation cannot go much further if we maintain a wise banking and federal fiscal policy. Such policies constitute indirect price controls. If these are effective direct price controls can be confined to a few war and other strategic commodities — and the control of these will be relatively simple.

Restricting the money supply can limit inflation. It may be said that there is just one cause of price inflation — that inflation is caused when we spend more than our income. The “we” in that case includes all

of us — the government as well as individuals. Spending includes money spent for war materials and for investment as well as for consumption. But increased spending and increased income go hand in hand. When one person spends money, someone else receives it, so for every increase of expenditures at one place in the economy there is an equal increase of income somewhere else.

On the other hand, there is a limit to the extent that expenditures can be increased without an increase in the amount of our money supply (bank deposits plus currency outside banks). Expenditures can be increased only with (1) an increase in the velocity of circulation, or (2) an increase in the amount of money. The *maximum* velocity of circulation is pretty well fixed by the custom of paying bills and wages and salaries at fixed intervals (monthly, weekly, etc.). Velocity of circulation is ordinarily somewhat below this maximum — people accumulate cash or bank deposits beyond their minimum needs.

The rise in prices since June has been due primarily to anticipatory buying. There has not been any considerable amount of deficit financing of the federal government. A large share of the price rise may, nevertheless, be attributed to the government's financial policies during World War II. Those policies resulted in our money supply being increased nearly three-fold and supplied the "excess" cash balances which have recently been used to bid up prices. Also, through causing the price inflation which had occurred prior to June 1950, the government's fiscal policies laid the basis for the expectation of further large scale deficit financing and further inflation of the money supply and of prices whenever we are involved in a large scale military effort. Past fiscal policies have, then, supplied a motive as well as the means for people to bid up prices.

The money supply can be limited by restricting bank loans. Any increase in the money supply may be expected to come through an expansion of bank credit. In other countries it may come by printing more currency but we use the bank loan route to inflation. If no increases were permitted in the money supply, any increase in prices would have to be financed by more rapid spending of the present supply of money (assuming no decline in the output of goods and services). In the absence of great likelihood of inflation any further increase in the rapidity of turnover of the money supply is likely to be temporary. With no increase in the money supply the costs of war would have to be taken from the income received, either as taxes or as loans to the government. There would be no great increase in prices because consumers would not have enough money to pay higher prices.

Heavy taxes on consumers tend to hold prices down. No matter

how high personal incomes rise, the consumer can bid for goods and services with only the fraction that is left after paying taxes. So taxation can be used as an anti-inflationary measure. Certain business taxes can be passed on to consumers in the form of higher prices, hence are not strongly anti-inflationary but such taxes as personal income taxes, excise taxes on consumers' goods and sales taxes limit the buying power of consumers.

Bond sales to the public reduce spending ability of consumers temporarily. Money saved and invested in government bonds is removed from the market for consumers' goods. The consumers' buying power is thereby restricted. However the proceeds become available whenever the government redeems the bond. To the extent that the government has to borrow from banks to redeem bonds the money supply is increased at that time. If the bonds held by individuals are redeemed out of tax receipts there is no change in the money supply — just an exchange of cash from the taxpayer to the bond holder.

Direct price controls tend to postpone inflation, not prevent it. Some direct price controls have already been imposed and more are to be expected. But direct controls, even if they should be "across the board," do not obviate the need for indirect controls. A price inflation potential built up through an unbalanced budget or other means of bank credit expansion can be held in check for a time by direct controls. But eventually the direct controls must be removed and prices will rise.

Direct controls cannot permanently prevent inflation unless we give up a free economy. Furthermore, a balanced budget and restriction of bank credit can remove from the direct controls the main burden of preventing inflation and leave the direct controls free to be used as special controls to direct production and consumption at key points in the economy. The more nearly we approach the ideal of a balanced budget and controlled bank credit the sooner we can dispense with any direct controls which may have been forced upon us.

We shall have some indirect controls, some direct controls, and probably some inflation. Rising prices have some beneficial effects. They help to ration goods. They may induce increased output. The changes in price relationships may cause quick shifts in production in the needed direction — but not necessarily so. But our adjustments following this struggle will be far easier if we can *prevent* inflation. Probably neither the indirect nor direct controls — or a combination of both — will succeed altogether in preventing further price inflation, but inflation must be held in check if our way of life is to survive.

SAFETY PRECAUTIONS FOR ILLINOIS FARMERS SHIPPING LIVESTOCK BY TRUCK

In May 1950 an Illinois farmer shipped 11 hogs to market. Three, weighing 165 pounds each, sold for \$20.00 a hundred, and eight, weighing 210 pounds each, sold for \$12.00 per hundred because they had "sore feet" and were "crampy." The trucker's invoice showed only three hogs insured, the three that sold at the market price. The eight sold at a discount were not insured.

This was one farmer and a loss of about \$135 was important to him. The loss from all animals dead on arrival at the market in 1949 was estimated at \$4,472,871 and the loss from cripples was estimated at \$6,816,995.¹ These two classes of losses are readily visible and can be charged back to the farmer. Another type loss estimated at \$25,097,682 is more difficult to estimate until after the animals are slaughtered — loss from bruises. This article is primarily concerned with losses from deads and cripples, but in correcting that situation the losses from bruises may also be reduced.

There is always a possibility of loss from animals becoming crippled or dying when in transit. The farmer can do certain things to reduce this such as:

- (1) Sell only healthy livestock.
- (2) Load carefully and slowly.
- (3) Have adequate loading facilities.

But the livestock trucker plays an important part in the delivery of livestock to the market.

The trucker's part in reducing losses can be summarized as follows:

- (1) Adequate and proper bedding (cinders are not recommended).
- (2) Use partitions to separate different species.
- (3) Load according to prescribed and recognized weight limits.
- (4) Stop occasionally *to check the load*, reducing the possibility of the livestock piling up.
- (5) Make as smooth a trip as possible.
- (6) Use canvas slappers instead of clubs to drive livestock.

But with all possible precautions certain losses will still occur. The 1939 Illinois Legislature passed an Act which provided in part for protection of the shipper as follows:

Carriers for hire must use bills of lading on forms prescribed by the Department. This bill shall give the kind of property being transported,

¹ The Costly Waste in Marketing Livestock, 1949 Report, National Livestock Loss Prevention Board, pp. 21-22.

TABLE 1. — REPRESENTATIVE INSURANCE RATES FOR HOGS
(Cents Per Head)

Distance (miles)	Market				
	1	2	3	4	5
51-75.....	17	16	12	12	7
76-100.....	19	18	14	12	9
101-150.....	21	20	17	15	11
151-200.....	23	24	20	16	13

general description, weight, number of units, whether insured, name of insurance company, name and address of consignor and consignee, point of origin and destination, date property received and date of delivery. These bills are made out in quadruplicate, one copy for the consignor, one copy for the consignee, one copy retained by the carrier and one copy sent to the Department when requested.

Local and interstate truckers for hire must file with the Department of Public Works and Buildings a surety bond or insurance policy conditioned upon the carrier compensating shipper or consignees for the carrier's legal liability for loss or damage to property belonging to them. This bond or policy must be issued at not less than the following amounts:

- (a) \$1,000 for loss or damage to property carried on one vehicle.
- (b) \$2,000 for loss or damage in the aggregate at any one time.

This requirement may be waived by the Department if a sufficient financial statement is submitted.

A farmer shipping livestock by truck should find out what provision the trucker has for protecting him from loss. In addition good business practice would dictate that a bill of lading be used. A shipment of hogs valued at, say, \$1,200, should be sufficiently important to necessitate the farmer having some evidence as to the shipment.

Insurance is available for truck movement of livestock. The rate varies between markets and species and increases with distance depending upon loss experience (Table 1).

In some cases the trucker absorbs the insurance, that is, it is part of the rate. In other cases, the insurance is in addition to the truck rate. The farmer should determine which is the case with his trucker.

Generally, it is not permissible to insure only part of a consignment of hogs. With most insurance companies in case of loss, the trucker furnishes them with a statement that the livestock were in "good, normal, healthy condition when loaded, and that the load is transported with due care and regard for its safety and proper preservation." The insurance company representative inspects the livestock at destination to determine

the nature and extent of loss from death or injury in transit. If there is a loss and the bills of lading were properly completed, the farmer has protection by knowing who provided the insurance.

Some truckers have unusually heavy insurance rates because of excessive loss experience. This is added cost to the shipper. The shipper should find out what is the normal rate from his farm to market and compare this with the rate his trucker pays, to keep his transportation costs at a minimum.

Conclusion. When shipping livestock by truck, the shipper should determine:

- (1) What protection the trucker provides in case any of the livestock die or are crippled in transit.
- (2) If insurance is provided and if it is part of the truck rate or in addition to the truck rate.
- (3) How the specific trucker rate compares with the average rate for the particular market.

If the above points are followed and a loss occurs, the shipper knows to what extent he is protected.

The shipper should insist on a bill of lading which designates a general description of the livestock shipped, name and address of consignor and consignee, point of origin and point of destination and whether insured.

W. J. WILLS and N. G. P. KRAUSZ

DOES SWEDEN HAVE THE ANSWER TO SOIL CONSERVATION?

You may say it's because of the weather that the farmers of Sweden do not have the problem of soil conservation that our farmers face. The soils in most parts of Sweden are as good or better than they were when farming started in the country 3,000 years before Christ. There are several reasons for this. It is true that the climate is mild. There are no driving rains or strong winds as we have, especially in the Midwest. A very mild thunderstorm will create considerable excitement — dogs begin to bark and babies break out crying. When it rains in Sweden, which is quite often, it is usually gentle, small-drop rain which goes immediately into the soil. Water run-off, even from quite steep slopes, is very rare. Most of the streams are clear, not muddy like so many of ours.

The concern of the people for the land is probably the chief reason why Sweden has no soil conservation problem. The Swedes want to keep their land fertile so they have put over a third of the arable land in per-

manent hay, hay and pasture in rotation and some arable land in permanent pasture.

Then they have given to government the right to see that a farmer does a good job of taking care of his land. Each community has a government agent for the job, usually selected from among the good farmers. He first gently warns a farmer who is abusing his land and gives him some information on how to take care of it. The second warning is to help the farmer and work out a plan of good land use; then see that he carries it out. After all other means to influence or induce the farmer to change his practices have failed the government can step in, buy the farm at going market prices, recondition it, and sell it to someone else who will take good care of it. Only in rare cases, one or two in the whole country, is it necessary to take such extreme measures.

A third reason for the good land use in Sweden is the extensive use of animals. Dairy cattle are the foundation upon which the Swedish farm has built its chief income. The average is a little over four cows per farm. The larger farms, however, have from six to ten cows. The average production per cow was over 5,000 pounds in 1948-49, although records kept on better producing herds showed an average production of about 9,700 pounds per cow per year.

Every farmer, moreover, has one or more horses and they really are fine looking animals. Because many farmers have forest land and work in the forests, mostly cutting wood for fuel for sale in the cities, horses are essential; they do not trample small trees as tractors would, so tractors are not allowed in forests of heavy growth. Even so, there were more than 50,000 tractors on Swedish farms in 1950 and the number is growing rapidly. Yet they will not completely replace the horse for a long time to come.

Cattle and horses on small farms produce manure, and Swedish farmers have faithfully conserved and spread manure on the land. The five- or ten-crop-acre farmer, who usually has some forest land, too, can cover all his cropland with manure each year. Many farmers have concrete urine tanks so as to conserve the best that is in the manure; it all goes on the land.

Most of the farmland in Sweden is owned by the operator. Less than one-fifth of all farms or holdings with more than five crop acres is rented, although a little over one-fourth of the actual acreage is rented. As farms grow larger the acres rented increase so that somewhat more than one-third of the farms over 250 acres of cropland are rented. A renter is almost always one who also owns some land.

An important thing about tenancy in Sweden is that most of the rented

land is farmed by owner-operators of other land and not by nonowners. Tenancy is found only on the very largest farms. Tenancy as we find it in the United States is not common in Sweden. There is a good reason for this, too, which is written into Swedish law. In Sweden the law requires that anyone buying a farm must plan to live on and operate that farm. One who has one farm, moreover, may not buy another unless the farm he now operates is too small for economical operation. When farms are for sale the government can step in and buy them if it is apparent that the sale will be to some person or firm who wants to get the farm for some reason other than living on it and getting his living from it. So the government has priority of purchase right to property connected with farming and belonging to a company, association, institution or entailed estate, or which is owned by a private person who is not officially registered as owner of the property, which means he is not living on it and using it for gaining a living.

Much of the rented land in Sweden is rented from old people who have no children at home but who continue to live in the old home, renting the land to a neighbor. Many farmsteads have two or more dwelling houses so that a son and his wife or daughter and her husband may live in one of the houses and rent the land from the old couple. The system of old age pensions in Sweden, guaranteeing every person or couple \$500 a year or more, depending on circumstances, makes it possible for the old couple to stay in the old farm home and not depend on the income of the young couple.

Sweden is working to prevent further division of small farms and to do that the government helps a man who has too small a farm to get more land so that he can provide his family a good standard of living. Although their law now limits the size of a farm to be acquired, a farmer may borrow money to purchase more land to make a family farm out of what he now has. He may borrow at a very low interest rate and pay it back as he is able. He can get loans, too, for land improvement, drainage, etc., and these loans can be written off at the rate of one-fifth per year commencing with the sixth or tenth year if the improvements for which the loan was intended have been carried out satisfactorily. However, a farmer must need such a loan and he can only get up to 40 percent of the total cost of the improvement; he must put the rest in himself.

The underlying purpose of the land-use ownership and tenancy policies in Sweden is to put a stable, family-farm owner on the land who will do a good job in producing and taking care of his land. The Swedes believe the family-farm owner-operator is the most effective conserver of soil and the most efficient producer of food. Wouldn't this work for conservation of soil in America, too?

D. E. LINDSTROM

**SOME COMMENTS ON THE IMPORTANCE OF A MARKET
WITH SPECIAL REFERENCE TO THREE
WAR-EXPANDED COMMODITIES**

The basic importance of a market. One of the keys to any successful enterprise is a good market. The soybean industry in the United States grew rapidly because a market was rapidly developed for its two major products: meal and oil. Meal found a place in the supplying of protein feeds for livestock, dairy cattle, and poultry. Nutritional science demonstrated an economic need for more protein to supplement our large supplies of starch feeds (corn) and roughages. A feed mixing and distributing industry grew up to act as effective salesmen of these materials to farmers. The growing markets for meat, milk, and eggs provided the basis for expanding flocks and herds. Eighty percent of the tonnage of marketable soybean products is in meal. The other major product of the soybean products (15-17 percent by weight) is oil. This found a growing market mainly in food uses, particularly vegetable shortening and margarine, and partially as drying and technical oils. In the food field, it competed with or supplemented mainly cottonseed oil, a product which has not had an upward trend in output in recent years because of factors related to the market for cotton, of which it is a by-product. In the technical field, soybean oil competed with and supplemented mainly linseed oil. These well-known facts are stated here to illustrate the principle that a good market is essential to the growth of an enterprise.

The United States market is huge. One of the factors which makes for efficiency in American production is the breadth of the market—based on the needs of upwards of 150 million people, for the most part high-income consumers. This market is a unified one. There are no major barriers to trade within it such as develop between foreign countries (tariffs, import licenses, etc.). Our marketing systems are organized so that goods may be sold over the whole country. Transportation costs may act as barriers, of course, and so cause some agricultural products to be produced largely for nearby use. Fluid milk is the best example of this. But note how some kinds of fruits and vegetables are distributed all over the country. This large market permits farmers to specialize and so facilitates large-scale efficient production, concentrated in areas with greatest advantage. The bulk of the income of the 200,000 Illinois farmers comes from a few products: cattle, hogs, corn, soybeans, milk, poultry, and eggs. Our huge market is basic to our efficiency.

In some commodities foreign markets are important. For some products the market is not confined to the United States of America, as we produce more than we need. In such cases we seek foreign markets. Historically what we have sold abroad has changed with shifts in our own

output, growth of our population, and shifts in the availability of supplies in foreign markets. We sell hundreds of agricultural items in foreign markets but in the last fiscal year (July 1949 to June 1950) the big nine items or classes of exports were (in millions of dollars):

Cotton.....	\$949	Dairy products.....	\$114
Wheat and flour.....	695	Total fruits and products..	108
Tobacco.....	235	Animal oils and fats ¹	104
Corn and meal.....	165	Rice.....	73
Oilseeds, oils and meals....	160		

Two points have been made: (a) basic to success of an industry is a good market; (b) sales in the United States supplemented for some commodities by foreign outlets provide a huge market for accepted products. This is a basic factor in our farming efficiency.

The case of three war-developed commodities. Three products which had considerable development during the war are nonfat dry milk solids, dried eggs, and soybean flour. These all have certain common characteristics; they are sources of protein and are relatively nonperishable. Will these products find a market? If not, their production will decline. Of the three, nonfat dry milk solids have shown the best ability to find a market. In 1939 production was 268 million pounds and in 1949 it was 918 million pounds. Of this 450 million pounds were sold in the domestic market, the balance to government agencies, chiefly the United States Department of Agriculture as a price support measure, or commercially exported. Thus domestic sales were two-thirds larger than the output of ten years earlier. The big uses were in bakeries (272 million), dairies (97 million), and meat processors (33 million). These figures are furnished by the American Dry Milk Institute. Even though output, stimulated by government price support operations, was twice domestic use, a healthy growth in a developing market is evidenced.

Likewise, as a group, exports of nonfat dry milk solids hold up better than for dairy products which declined in total value by over 50 percent between 1948-49 and 1949-50 as world milk production rose. In contrast, exports of nonfat dry milk solids declined only about 3 percent: from 196 million to 190 million pounds. A cheap source of protein of wide use in food products would seem to have possibilities in world markets. Some subsidies may have been involved.

It is most important to our butter industry that good use be found for the nonfat fraction of the milk. Income from sale of butter alone may not be good enough under American cost conditions to keep farmers producing milk for butter alone. Other uses for skim milk besides feeding livestock

¹ Chiefly lard (\$68) and tallow (\$29).

where it competes with cheaper vegetable proteins include cottage cheese and skimmed condensed milk.

A question may be raised: Does the support of a minimum price on this product by government purchases tend to retard sales? Price is always a factor in developing and holding markets. This is a question for both the dairy industry and the government to consider.

Dried eggs stand at the other extreme in market acceptance. These compete with fresh or storage eggs which are on sale in most retail food stores and with frozen eggs which have good commercial outlets. The Institute of American Poultry Industries is the authority for the statement that only about 7 million pounds of dried eggs are used commercially in the United States, while in 1949, 75 million pounds were produced, of which 69 million were purchased by the United States Department of Agriculture, as a price support measure. The major uses for dried egg albumen are in candy and cake mixes, for dried yolks in cakes, muffins, etc., and ice cream. One can conclude that commercial development of this industry is limited by a meager market.

In contrast 315 million pounds of frozen eggs were produced in 1949; all were used commercially. The frozen egg industry renders a useful economic service in providing an outlet for our seasonal surplus of eggs, particularly in the Midwest. Many eggs are so used in Illinois. The principal outlets for frozen egg products (albumens, yolks, and whole eggs) are in candy, noodles, mayonnaise, and commercial bakery products (cakes, etc.). The test of commercial experience indicates frozen eggs have shown a greater capacity to find a market than have dried eggs.

On a subsidized basis dried eggs currently show more export potential than do frozen eggs, as is indicated by the following figures for exports:

	1948-49	1949-50
Dried eggs.....	8.4 M. lbs.	36.2 M. lbs.
Frozen eggs.....	19.4 M. lbs.	2.5 M. lbs.

Possibly larger foreign markets can be found for dried eggs on a highly subsidized basis. The average reported value of the 1949-50 exports was 36 cents a pound, far below their cost to the government. Long-run export prospects would seem slight as world egg production becomes more normal.

There has been much recent talk of imports of egg products. Total imports of dried and frozen eggs in 1948-49 were 434,000 pounds and in 1949-50, 5,950,000 pounds.

The soy flour industry is another example of wartime and postwar expansion which apparently has not yet been able to establish a large market. Again it is a cheap source of high protein food. The picture is

TABLE 1.—SOY FLOUR AND GRITS: UNITED STATES PRODUCTION AND EXPORTS, 1935-50

Year beginning October 1	Production ¹			Exports		
	Full fat products	Low fat and defatted products	Total	Commercial ²	Military ³	Total
	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds
1935-36.....	.....	.....	22,000	.....	.....	.....
1936-37.....	.....	.....	24,000	.....	.....	.....
1937-38.....	.....	.....	26,000	.....	.....	.....
1938-39.....	.....	.....	28,000	.....	.....	.....
1939-40.....	.....	.....	30,000	.....	.....	.....
1940-41.....	.....	.....	50,000	.....	.....	.....
1941-42.....	28,000	56,125	84,125	.....	.....	.....
1942-43.....	90,600	181,000	271,600	22,971	.....	22,971
1943-44.....	77,185	174,280	251,465	100,540	.....	100,540
1944-45.....	43,925	72,715	116,640	58,460	14,374	72,834
1945-46.....	50,914	322,761	373,675	183,642	3,604	187,246
1946-47.....	21,263	358,537	379,800	105,814	135,223	241,037
1947-48.....	7,746	667,633	675,379	479,674	74,879	554,553
1948-49.....	9,192	134,356	143,548	56,186	.....	56,186
Oct.-June 1949-50 ⁴	7,018	111,584	118,602	13,101	.....	13,101

¹ Based on reports of the Soy Flour Association supplemented by information furnished the War Food Administration by the industry for 1942-48 and the Census Bureau for 1949 to date. Data for 1935-41 are rough approximations used during the war years since no exact data were available.

² Reported by the Census Bureau—not available prior to 1943. Thus the first figure is for January-September, 1943 only. Include exports under the Lend Lease program.

³ Shipments for military relief feeding furnished by the National Military Establishments for 1944-46 and by the Census Bureau for 1947. Beginning with January, 1948, included with commercial exports. The export figures do not include purchases by the Military for its own use.

⁴ Partly estimated.

Grain Branch—PMA

shown in Table 1. Like those for any new industry, the output figures are not too accurate, but presumably reflect trends. The figures for 1935-41 are stated to be rough approximations.

Rising from an estimated 22 to 50 million pounds before the war, output rose irregularly to a peak of 675 million pounds in 1947-48. Of this, 555 million pounds were exported. This peak figure—338,000 tons—compares with production of soybean cake and meal (including the flour) of 3,833 million tons, or over 11 times the output of flour. Thus in the peak year production of soy flour and grits represented about one-tenth of the output of meal used primarily for feed. In 1948-49 the ratio was only a little over three percent.

Comparing the production and export figures we note that the rise in this industry during the war was largely based on exports. These were financed by various United States funds in a period of world-wide food deficiency. As shortages eased and as supplies of foods (animal origin) became more normal, this export market drastically declined. This is dramatically illustrated by the sharp drop in exports between 1947-48 and 1948-49, a decline which continued in 1949-50. Exports for the fiscal years (July-June) were 336 million pounds in 1948-49 and 19 million pounds in 1949-50.

Development of a foreign market on a commercial basis will not be a matter of price, for soybean flour is a cheap source of protein, but rather of intensive efforts to find how soybean flour can be fitted into a variety of food products. Observations by the writer indicate that this will be more difficult than in the United States because most foreign peoples are more conservative in their food habits than are our people. It should be noted that in the Orient, where soybeans have long been used as a food, soybean flour is not used, the soybeans being prepared in other ways.

The difference between production and exports shown in Table 1 must approximate domestic use, although considerable year-to-year fluctuation in inventories is likely. These differences average as follows:

1935-1939.....	26,000,000 pounds
1940-1941.....	67,000,000 pounds
1942-1945.....	158,000,000 pounds
1946-1948.....	116,000,000 pounds
1949.....	123,000,000 pounds ¹

These figures suggest a sharp increase in domestic use since prewar, say from 13,000 to 60,000 tons, a five-fold increase. However, the latter is very small in relation to present feed use — about 1.5 percent. To increase use in food will require a great deal of promotional work with wholesale users — various food processors who may find it desirable to include soybean flour in various product-mixes or to use in special products. As in similar cases, this work will be done primarily by various soybean processors who take a long-time view on the question of market development.

Considering the three products as a group, nonfat dry milk solids now have the best established market — both domestic and foreign. The market for dried eggs is rather small, and foreign sales largely depend on subsidies. The market for soybean flour is minute in relation to that for meal but shows promise of gradual development. Both the milk and soybean products have two distinct features in their favor; they are sources of what is basically the scarcest factor in world supplies — protein — and are relatively cheap. Dried eggs have a dominant competitor — frozen eggs — which has distinct advantages in commercial use.

In any case the development of these industries depends on the possibilities of developing permanent markets on an economic basis. In this they fit into the universal principle that the growth of an industry depends on the development of a market.

L. J. NORTON

¹ Partly estimated.



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TABLE A.—INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income pay-ments ⁸	Weekly wages, all manu-facturing industries, unadjusted ⁹	Indu-tria prod-uction
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All com-modities ¹	Farm products ²				In money ⁶	In pur-chasing power ⁷			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-
1934.....	93	86	76	96	79	68	71	80	68	75
1935.....	99	104	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	306	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	247	275	207	383	392	189	303	351	192
1949.....	192	218	218	200	343	346	176	308	325	176
1949 Oct.....	189	210	209	196	505	559	285	299	321	166
Nov.....	188	206	201	196	435	367	187	302	314	173
Dec.....	188	204	202	196	371	333	170	307	329	179
1950 Jan.....	188	204	201	199	337	379	190	314	329	183
Feb.....	190	209	209	198	240	307	155	320	330	180
Mar.....	190	210	209	200	247	325	163	327	334	187
Apr.....	190	210	213	200	232	258	129	319	337	190
May.....	193	217	226	203	266	332	163	319	348	195
June.....	195	218	226	204	275	285	140	323	363	199
July.....	202	232	241	204	353	393	193	326	367	196
Aug.....	206	234	240	206	383	344	167	333	394	209
Sept.....	210	237	243	208	437	339	163	339	404	212
Oct.....	210	234	235	208	538	549	264	340	...	217

TABLE B.—PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			Dec. 1949	Current months, 1950		
	1935-39	1949	1950		Oct.	Nov.	Dec.
Corn, bu.....	\$.66	\$1.17	\$1.35	\$1.18	\$1.39	\$1.44	\$1.53
Oats, Nov.....	.31	.64	.76	.70	.73	.84	.88
Wheat, bu.....	.86	1.95	2.02	1.97	1.95	2.01	2.12
Barley, bu.....	.62	1.07	1.20	1.08	1.27	1.29	1.32
Soybeans, bu.....	.90	2.19	2.49	2.14	2.06	2.65	2.80
Hogs, cwt.....	8.52	18.58	18.08	14.80	19.20	17.50	17.70
Beef cattle, cwt.....	7.88	21.19	24.54	20.00	25.40	27.20	27.70
Lambs, cwt.....	8.36	23.43	25.06	20.90	25.50	27.30	28.10
Milk cows, head	58.00	198.33	216.67	200.00	220.00	230.00	230.00
Veal calves, cwt.....	8.66	25.05	28.01	21.60	29.30	30.80	30.50
Sheep, cwt.....	3.58	8.70	10.52	8.40	11.90	12.40	12.50
Butterfat, lb.....	.27	.58	.58	.59	.60	.60	.60
Milk, cwt.....	1.68	3.42	3.42	3.60	3.65	3.75	3.80
Eggs, doz.....	.19	.40	.31	.35	.36	.39	.53
Chickens, lb.....	.15	.27	.23	.22	.22	.22	.23
Wool, lb.....	.25	.42	.50	.42	.56	.60	.63
Apples, bush.....	4.08	2.38	2.24	1.65	1.95	2.10	2.30
Hay, ton ¹³	9.39	22.68	20.77	22.00	20.50	20.80	22.40

^{1 13} For sources of data in tables see preceding issue.

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EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS

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Articles in This Issue

PAGE

The Outlook for Farm Costs and Net Income — F. J. REISS.....1113

What Production and Marketing Policies Should We Have? —

L. J. NORTON.....1118

Wage Bonus Plans for Farm Workers — J. B. CUNNINGHAM.....1122

Legumes and Grass in Farming Systems — J. E. WILLS.....1125

Short-time Price Fluctuations Are Still Possible — G. L. JORDAN.....1130

THE OUTLOOK FOR FARM COSTS AND NET INCOME¹

The agricultural outlook has been summed up with the prediction of "another good year for farm families in 1951." We could say with equal truth that it will be another good year for the dealers, merchants, and others who supply farmers with the goods and services they need in carrying on their farm businesses.

The total cash income produced by your farm last year was probably a very satisfying figure. On the other hand, the total cash outlay for your farm business was probably a very sobering figure when compared with what your cash expenses were as recently as World War II. If you have been farming long enough to make this comparison you may, with justification, wonder about the size of both figures, and ask if there is any social significance in this relationship.

In the five pre-depression years, 1926-1930, our account-keeping farms averaged 206 acres in size with a total gross cash income of \$5,230 (Table 1). Total cash expenses amounted to \$3,039, an amount equal to 58 percent of the cash income. Fifteen years later in the second World War, 1941-1945, the average account-keeping farm was 247 acres in size, and gross cash income had more than doubled. But so had cash expenses, and the ratio stood at 59 percent of the cash income. Cash farm expenditures followed the decline in cash farm income in the depression years, dropping 57 percent, but climbing to 64 percent of the cash income in 1936-1940,

¹ Adapted from a talk given at the Farm and Home Week, University of Illinois, February 5, 1951.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

TABLE 1. — AVERAGE CASH FARM INCOME, EXPENSE, AND PRICE RATIOS ON ILLINOIS ACCOUNT-KEEPING FARMS, 1926 THROUGH 1949

	1926 to 1930	1931 to 1935	1936 to 1940	1941 to 1945	1946	1947	1948	1949	1950*
Average size of farm.....	206	219	233	247	254	254	259	261	263
Total cash income per farm.....	\$5,230	\$3,316	\$5,644	\$11,839	\$15,544	\$21,054	\$22,157	\$21,560	\$22,750
Total cash expense per farm.....	3,039	1,891	3,595	7,001	9,080	13,278	15,113	15,114	15,560
Percent cash expense is of cash income.....	58	57	64	59	58	63	71	71	68
Average Illinois farm price of corn.....	\$.76	\$.46	\$.61	\$.90	\$ 1.39	\$ 1.90	\$ 1.80	\$ 1.17	\$ 1.35
Cash expense in bushels of corn.....	3,999	4,111	5,893	7,779	6,532	6,988	8,313	12,918	11,481
Average Illinois farm price of hogs.....	\$ 9.99	\$ 5.35	\$ 7.99	\$ 12.91	\$ 17.53	\$ 25.04	\$ 23.71	\$ 18.58	\$ 18.08
Cash expense in hundredweight of hogs.....	304	353	450	542	518	580	603	813	857

* All figures for 1950 are estimated except the average prices for corn and hogs.
Data presented at Farm and Home Week, University of Illinois, February 5, 1951.

TABLE 2. — AVERAGE CASH EXPENDITURES PER FARM FOR SELECTED TYPES OF ILLINOIS ACCOUNT-KEEPING FARMS
RANGING FROM 180 TO 259 ACRES IN SIZE, 1947, 1948 AND 1949

Items	Grain farms			Hog farms			Dairy farms		
	1947	1948	1949	1947	1948	1949	1947	1948	1949
Number of farms.....	227	164	123	184	214	130	67	71	57
Average size of farm.....	223	224	223	218	219	219	215	214	216
Cash expenditures for:									
Breeding and feeding stock.....	\$1,592		\$1,704	\$2,923		\$3,378	\$1,644		\$1,770
Feed, grain, and seeds.....	1,636		1,584	4,649		3,700	2,532		2,737
Machinery repairs, supplies and custom work hired.....	970	1,053	961	1,108	1,179	1,101	1,131	1,211	1,072
Gasoline and oil.....	510	602	589	598	626	609	542	628	610
Hired labor (including products furnished).....	590	627	534	878	976	832	1,328	1,276	1,114
Fertilizer.....	(a)	235	177	(b)	182	183	(c)	225	248
Buildings and fence repairs.....	253	265	233	419	424	396	457	484	469
Other cash operating expenses.....	(a)	1,174	1,253	(b)	1,333	1,478	(c)	1,644	1,847
New machinery and equipment.....	\$1,414	\$ 1,913	\$ 1,836	\$ 1,605	\$ 2,039	\$ 1,897	\$ 1,390	\$ 2,380	\$ 2,026
New buildings, fence, tile, etc.....	564	522	545	650	706	788	603	951	933
Limestone and rock phosphate.....	400	343	371	327	312	271	295	222	212
Farm share of new autos.....	234	339	370	197	385	308	192	210	359
Total cash expenditures.....	\$9,434	\$10,387	\$10,027	\$14,746	\$16,509	\$14,993	\$11,967	\$13,517	\$13,397
Total farm depreciation on:									
Machinery and equipment.....	\$ 655	\$ 760	\$ 891	\$ 701	\$ 864	\$ 3,264	\$ 2,480	\$ 3,763	\$ 3,530
Buildings, fence, tile, etc.....	325	389	512	449	508	504	499	534	593

a period in which many of you were rebuilding your operating capital after the lean years of the early thirties. You did more than that; you re-tooled (to use a modern term) from horse to tractor power in that period. Thank goodness, you did! We would never have come through the next five years with such an enviable record of agricultural production if you had not had your farms in pretty good shape as far as capital improvements and equipment were concerned.

The average size of our account-keeping farms reached 254 acres in 1946, but even though cash income was three times as great, per farm, as in the late twenties, cash expenditures had also tripled, and the ratio of cash expense to cash income remained at 58 percent. Your farm equipment, however, was badly worn or out-of-date by the end of the war.

As goods became available and incomes increased when price ceilings were removed, you re-tooled and re-built your capital equipment. This time the emphasis was on labor-saving machinery first and modern farm improvements second. One-man machines, new type grain storage, paint, farm shops and extension of electrical power uses were some of the items that absorbed surplus income; and this year I have noted considerable land improvement through tiling and drainage projects.

Gross cash farm incomes on these account-keeping farms increased 40 percent from 1946 to 1947, and then declined slowly from that level through 1949. Further mechanization, the replacement of exhausted capital, and higher price tags on purely operating items, at a time when farm income was declining, helped you to run your cash farm expenditures to a new high of 71 percent of the cash income in 1948. (The previous high since 1926 was 68 percent in 1939.) Cash expenditures in 1949 and 1950 on these farms continued at a high level with 70 percent and 68 percent respectively.

An upward trend in cash expenditures and a downward trend in cash income does some drastic things to the net income in between. Net farm earnings in 1949, figured on the accrual basis, were less than half as great as earnings at the high point of 1947. This squeeze on farm income continued through the first half of 1950 at which time prospects were strong for a drop of 10 to 20 percent below 1949.

However, political and military events in the world made this country decide to re-arm and to prepare against aggression both here and abroad. This, plus our military efforts in Korea, stimulated demand for agricultural products. It is characteristic for prices received by farmers to respond quickly to changes in consumer demand because the processor, wholesalers, jobbers, and retailers between the consumer and the farm find it necessary to pass on such changes quickly in their competition for

business. Thus the farmers' share of the consumers' dollar went from 46 cents in June 1950 to 49 in November, and I expect that you are now getting one half or more of the consumers' dollar for the first time since March 1949.

Farm costs do not rise so rapidly as prices received by farmers, but once having reached a high level they do not decline so rapidly either. It is in such periods as the one just ended in June of last year that net incomes suffer through the double action of high costs and declining income.

The two most important products from Illinois farms are corn and hogs. Have you ever figured how many bushels of corn or how many hundred pounds of hogs it would take to pay the cash expenses on your farm for one year? In other words, how much of the increased dollar cost is due to actual increases in expenses and how much to a rising price level? Back in 1926-1930 you could have paid the cash expenditures with 4,000 bushels of corn or 30,000 pounds of hogs, that is figuring an average account-keeping farm of 206 acres, and corn at 76 cents and hogs at 10 cents.

By 1949 our account-keeping farms had grown to an average of 261 acres, but putting the cash expense on an acre basis and figuring it for a 206 acre farm we found that instead of 4,000 bushels we now needed a little over 10,000 bushels of corn at the average price of \$1.17 to pay the cash expenditures on those farms in that year. If we used hogs, we needed 64,000 pounds in 1949 as compared to only 30,000 in 1926-1930.

Data concerning cash expenditures on grain, hog and dairy farms, 1947-1949, are given in Table 2.

I see little likelihood of any decline in the level of farm costs for 1951. Therefore, if we assume a cash expenditure of approximately \$15,000 for a 260 acre farm, it would take almost 9,000 bushels of corn or 75,000 pounds of hogs, at the December parity prices of \$1.68 and \$19.90 respectively, to pay the cash expenditures for 1951.

What does all this mean in terms of plans for 1951 and the years ahead? As I see it, there are four important considerations:

1. Cash expenditures on your farms will probably continue to be a higher proportion of cash income than was true when you farmed with horses and burned your own fuel. As long as this is true you will be more vulnerable to price declines because a larger proportion of your costs are determined by relatively inflexible prices. Land ownership may be more difficult for you to reach because the need for cash reserves and operating capital are larger. Differences in managerial competence and operating efficiency between individual farmers will become more apparent. The "ante" has been raised and you have to "look 'em over" more carefully.

2. Even though stronger demand for your products may be an invitation "to get it while the getting is good" in 1951, you have no good reason yet for sacrificing a well-balanced organization or a sound land use program for the additional income from an all out effort. I have enough faith in the world to believe that there will be need for agricultural products in 1961 and a good many years after that, and you want to farm in such a way now, that you or your sons will still be in business by then.

3. In the same line of reasoning higher price tags on replacement capital in 1951 should not be the signal to operate on inventory; that is, I think you will be wise to replace old machinery and equipment at the normal rate regardless of the higher prices you will have to pay for new items. In fact, it may be quite in order for you to make only such adjustments in your organization as will permit more efficient use of labor and capital. If you have difficulty getting hired help because you do not have full-time work for an extra man, it may be wise to make additional investments to sufficiently expand your business to provide such work.

On the other hand, if an additional machine, perhaps owned jointly with a neighbor, will remove the need for an extra man at peak seasons, it should result in greater efficiency in the use of our manpower resources and more profits to you. Peak requirements for either labor or machines may prove critical in 1951. Study your business to know at what price you can compete for available resources. Under a free price system the most efficient producers should be able to obtain the use of scarce resources.

4. If you are a young man just getting started in farming, you have the additional problem of building up to a satisfactory volume of business and a normal inventory under conditions making for high initial costs. How rapidly you will be able to accomplish this task may depend to a large extent upon the resources you have available. However, my advice would be to make maximum use of those resources to build a volume of business that will give you the greatest efficiency in the use of invested capital and yield a return that will allow enough above interest and debt payments to provide for a growing family. Keep a wise head, but do not be faint-hearted.

Do not attempt to buy a farm until you have sufficient savings to do so safely without reducing the investment you should have in operating capital. On the other hand, if you have enough savings accumulated, I would not hesitate to buy a farm, even at present prices, unless you have another use for your savings that would offer as much in satisfaction, security and future returns.

F. J. REISS

WHAT PRODUCTION AND MARKETING POLICIES SHOULD WE HAVE?

I have only two points to make on production.

1. There should be no limits set by the government as to acreage planted to grains or soybeans. This is in line with current policy. Quick elimination of these restrictions shows that we have learned a lesson because allotments were continued longer into the war period during World War II.

2. The individual farmer should plan on high level production over a period of years. At this time it looks to me as though we were in a long-distance run rather than a sprint. This means that good rotations which help to maintain yields should be maintained even though this means a smaller acreage of corn and soybeans than would an all-out program for high production in 1951. I will go even further and say that farmers and land owners who have been farming their land too hard should consider putting into effect better rotations which will sustain yields.

Two factors which argue for this policy are:

1. That we are likely in a long period of military effort.
2. That conditions seem to favor some expansions in cattle and sheep numbers. These require hay and pasture.

Prices of these species of animals are high in price. Cattle in particular are relatively economical of labor — a scarce item. Ownership of growing cattle is an excellent hedge against inflation. Farmers the world over recognize this.

It will pay to go after high yields. Fertilizers would seem to be the most readily available technique for accomplishing this. Use of fertilizers has increased rapidly in the Corn Belt since 1940 but there is still much room for expansion.

What happened to acreages of crops in 1950? For Illinois we find:

<i>Crop</i>	<i>1949</i>	<i>1950</i>	<i>Change</i>
Corn.....	9.3	8.3	-1.0
Oats.....	3.9	4.0	0.1
Wheat.....	1.9	1.5	-0.4
Hay (harvested).....	2.2	2.8	0.6
Soybeans (harvested).....	3.3	3.9	0.6

These crops show an increase of 1.3 million bushels; a decrease of 1.1 million. The balance of about 100,000 acres was probably taken up in rotated pasture for which we have no data. Note that hay was slightly less than 14 percent of the combined changes of those five crops. The

¹ Adapted from a talk given at the University of Illinois Farm and Home Week February 6, 1951.

reductions occurred in the two crops for which the government had allotment programs.

How about 1951? There has been 300,000 more acres seeded to wheat in Illinois than in the fall of 1949. This leaves less room for other crops. I would expect an increase in acreage of corn following the cut of a million acres last year and probably a reduction in soybeans. What do market prospects tell us?

Wheat. We are now producing wheat in excess of our national needs. The world markets are not particularly short of wheat. Our prices are above those commonly prevailing in northern Europe. To export wheat we have to subsidize by 66-76 cents a bushel. I would expect wheat to be a laggard in price rises.

Corn. We will cut into our huge carryover of corn. Livestock production is expanding. This is one reason for the comparative strength in corn prices.

Soybeans. A factor in the present high prices for soybeans is the short crop of cotton. We produced 9.9 million bales of cotton in 1950 compared to 16.1 in 1949. With each bale of cotton comes about 1,000 pounds of seed and roughly 160 pounds of oil. Cottonseed oil has been high in price and this has dragged up the price of our big crop of soybean oil. In fact the short crop of cotton and the high world demand for animal fats, particularly the inedibles (tallow and grease) have been the two facts which do much to explain the high price of soybeans. Soybean oil is about ten cents a pound higher than a year ago. This equals about one dollar a bushel of soybeans. The government wants a bigger crop of cotton—16 million bales is the goal. Prices are high and so increase in acreage and in output are likely. The cold winter has probably reduced the population of boll weevils. This will tend to make more cotton and so cottonseed oil. Soybeans could easily sell for lower prices next season than this.

How about marketing? 1. The reports indicate that corn has disappeared more slowly this season than last year. From October to January the disappearance was 1,041 million bushels; this is 8 percent less than last year. This suggests that shorter farm supplies, higher corn prices, and narrower feeding rates are causing economy in the use of corn. But the movement off farms has apparently been at a rapid rate. The off-farm stocks on January 1 were 504 million bushels compared to 400 million a year earlier. Farmers have been free sellers of corn at prevailing prices. Have they been misled by the fact that the price has gone above the loan? The disappearance of corn in the 1949-50 season was 3.35 million bushels. The total crop in 1950 was 3.1 million. If we use up corn at last year's rate

it would cut our carryover by 250 million bushels. But in the first quarter of the marketing year we have used less corn. When prices are high farmers find ways to economize on use of corn.

2. The government has adopted a policy of slow sale of its accumulated stocks. This appears to be based on the assumption that we do not know when we will have a short crop (there has not been one since 1947) and in the event of one, a reserve will be very useful. But the effects of such a government policy has been not to retard the advance in price. The opinion of the trade is that corn prices will go to the ceiling. There is as yet no ceiling price on corn or any other grain. The minimum ceiling is parity or around \$1.85 at Chicago. In places where supplies of feed are short, the price will likely go higher.

Ceilings on meats which are likely to dampen down further increases in livestock prices and the slow disappearance of corn from October-December give reason for one to pause about large further advances in the price of corn.

3. Does it now pay to hold high moisture corn until it dries out? The present discount for moisture at the 1, 1½, 2 cents per one-half percent moisture scale makes a discount of four cents for 17.5 percent moisture and 11½ cents for 20 percent below the price for No. 2. One thousand bushels of 20 percent moisture corn are equivalent to 970 bushels of 17.5 percent corn and 946 bushels of 15.5 percent corn. If No. 2 corn is worth \$1.70, then equivalent values are \$1,608 for 15.5 percent, \$1,610 for 17.5 percent, and \$1,595 for 20 percent. This moisture scale, therefore, makes comparatively little difference in total returns at the \$1.70 level for No. 2 corn up to 20 percent moisture. The increased bushels that go with the higher moisture offset the lower price.

One marketing factor that farmers should check carefully. Does your grain buyer have moisture testing equipment which gives accurate moisture determinations? One percent difference in moisture at the present scale equals three cents a bushel on all No. 4 corn and four cents on No. 5. These are mechanical devices and all kinds of machinery can get out of order.

Oats. There has been a strong advance in the oat price. But on January 1 there were 89 million more bushels of oats on hand than a year earlier, or ten percent more. Some grain speculators say that the ceiling-price of full parity or about \$1.05 at Chicago is a magnet toward which oats must eventually be drawn. They say farmers or holders will not sell for less. This does not seem entirely logical to me. If the ceiling is too high to allow the use of our large supply of oats or higher than the price at which people are willing to carry oats over into a new crop position,

I see no logical reason why the oat price has to go to parity. It is only five months before a new crop of oats will be available from Illinois.

Once the Great Lakes are again open, say after April 1, there will be a big movement of feed wheat from Canada to the north-eastern United States. This may cut down on use of oats for feed.

Soybeans. We have had a big advance in soybean prices. It came earlier than in 1949-50. This price is supported by high prices on fats and oils. Three reasons for these high prices are: (1) the short cotton crop; (2) the big advance in the prices of inedible animal fats which has pushed up the price of lard; and (3) consumer and trade stock piling of fats both in the United States and western Europe. It is reported that we may export 20-25 million bushels. We shipped out about four million in November. A factor in exports is the much shorter crop of olive oil in the Mediterranean area. This creates a demand for cheap "seed oil" and soybean oil can be so used. If crushings continue at the recent rate of 23 million bushels a month and exports are as high as the figure mentioned we may again have a very small carryover from our very large 1950 crop. Forward prices for soybean meal are above spot prices which are at their midwinter seasonal low.

Wheat. Seems to me to be the most overpriced of the grains. This seems to be contrary to the opinion of the market which is bullish on wheat. On January 1 we had 998 million bushels of wheat in store. Say we use 250 million for food in the next six months, feed 80 million, export 200 million, and use 30 million for seed, the total use would be 560 million and we would have 440 million bushels left over. We have planted a big acreage to winter wheat and will likely sow more spring wheat. We can look forward to having supplies of wheat of upwards of 1,500-1,600 million bushels. Our own normal use is about 700 million bushels. Current and prospective supplies are large. In the October-December 1950 period we used up and exported only 207 million bushels.

Basically our wheat has been overpriced by world standards. We subsidize sales to the tune of 66-76 cents a bushel. The higher the price of wheat is pushed, the higher the subsidy has to be because it is the difference between the United States price and \$1.80 under which we are obligated to sell wheat to the countries under the International Wheat Agreement. It is expected that our quota will be taken up this year. Recently in Washington I asked a well-informed man about this and his reply was: "Some of them now have dollars and they prefer to hold wheat (at \$1.80) than dollars." One cannot blame them.

India is also looking for a gift of some 70 million bushels of wheat.

Food conditions seem to be bad there. India is said to have passed up an opportunity to buy wheat from her neighbor, Pakistan. Whether the United States Congress will pick up the check on behalf of the American taxpayer, I do not know. The apparent attitude of the Indian leadership on Korea and the Chinese has caused Congress to take a look at this \$200 million. But this question should be settled on its merit as a humanitarian measure rather than on feelings toward how India looks at Asiatic policies. Neither people nor nations like to have people tell them how to think.

This wheat subsidy is now the most expensive drain on the Treasury which remains in the price support field. The expensive potato and dried egg schemes have gone into the limbo where they belong. If you like to pay taxes to keep the wheat growers happy in growing wheat in excess of the market needs in either this country or abroad that is okay. I do not. The budget includes \$117 million for these subsidies in the present year. The subsidized price tells farmers to grow wheat; the free market tells them that we need beef. As long as the American taxpayer picks up the check for the wheat subsidy the growers will likely give us wheat rather than beef. This wheat scheme is, at this time, the most serious error in our price-support program. Under present conditions we do not have to subsidize cotton, corn, hogs or butter. We have gotten rid of our potato and dried egg subsidies. We still continue it for wheat. Because of big supplies and the necessity of subsidy to export, it seems to me that wheat is overpriced. One excuse for this policy is that in a war we may have to ship a lot of wheat to Europe. The plain fact is that outside of the U. S. A. few people expect a war in western Europe in the near future.

L. J. NORTON

WAGE BONUS PLANS FOR FARM WORKERS

Many employers of farm labor are interested in wage-bonus plans. They wish to set up arrangements that will cause hired men to take a greater interest in their work; that will pay them for doing a superior job; that will attract and keep skilled, dependable labor on the farm; and that will result in greater production of crops and livestock to meet the present national emergency.

Obviously no one plan fits every farm equally well. Some farms have specialized hog enterprises and can base incentive payments on the hog enterprise; others are grain farms and can offer payments on production or income from grain; while many are general farms and can make payments on several enterprises.

These suggestions are designed to help employers and employees work out plans acceptable to them and adapted to their own needs. Both should have a voice in the final arrangements.

Important Things to Consider in Making Wage-Bonus Plans

1. The hired man should receive the going wage in the community plus a bonus on the production or gross income from one or more principal products. Because of accounting problems and other complications, a bonus based on net farm income is usually not satisfactory except between father and son or close relatives.

2. The hired man should have a good, comfortable, pleasant place to live. No plan can be satisfactory unless he and his family are reasonably happy and content with their living arrangements.

3. The kind and size of bonus should depend on size of business, type of farming, ability of the hired man, length of tenure, and other factors.

4. The bonus plan should be simple—one that anybody can understand.

5. The agreement should be in writing. If the plan is too complicated to state in simple, understandable language, it should not be used. Your attorney may help you prepare a contract.

6. Several bonus payments during the year are better than one payment at the end of the year—for example, one based on monthly dairy sales in contrast to one based on net farm returns for the year.

7. If, however, the bonus cannot be determined until the end of the year (as when it is based on pounds of pork or beef produced) and the hired man leaves the farm during the year for no fault of his own such as sickness, he should receive his proportionate share of the bonus—based on time worked.

8. On a general farm it is usually better to pay a small bonus on each of several enterprises than a big bonus on one—for example, three cents on every bushel of grain produced, plus five percent of dairy sales, plus a two weeks' vacation with pay rather than ten percent of dairy sales. Labor should be encouraged to take an active interest in all phases of the business.

9. If the bonus is for production above a minimum standard, the standard should be within reach of fairly good management.

Bonus suggestions. A bonus plan should be carefully selected, especially with reference to size of enterprise, so that the bonus rate will provide a payment that is substantial but not unreasonable. (One or more of the following may be used in the wage-bonus agreement.)

1. Three to six percent of the milk checks, payable monthly or when

check are received. May be used on a dairy farm or on a farm where there is an important dairy enterprise.

2. Fifty cents to one dollar per 100 pounds of milk sold above an agreed amount of annual sales per cow, say 5,000 to 7,000 pounds, depending on breed and other factors.

3. Fifty cents to one dollar per 100 pounds of pork or beef produced during the year. For example, if the bonus is 50 cents a hundred and the production is 100,000 pounds, the payment will be \$500. The employer and employee should confer and agree on pounds produced.

4. Fifty cents to one dollar for each pig weaned.

5. Four to six dollars for every sow that weans seven or more pigs.

6. Five to ten percent of gross hog income, with change in inventory considered.

7. A farmer in Christian county pays \$130 a month; plus $1\frac{1}{2}$ percent of gross hog sales; plus three percent of value of all grain crops, including landlord's share, at harvest time; plus two hogs to butcher, feed for 100 hens, and a modern house to live in. The hog bonus is payable when hogs are sold; grain bonus, when crops are harvested.

8. Five to ten cents per dozen for eggs sold over 12 dozen (or some other standard) per hen per year.

9. Five to ten percent of egg sales.

10. One to three dollars for each calf weaned.

11. One to two dollars for every lamb saved above one per ewe.

12. Two to five cents per bushel of grain produced.

13. Twenty-five to fifty cents per bushel of corn produced above an agreed yield per acre. The standard might be the county average for the year or the average for accounting farms with similar soils. Of course, such averages are not available until after the end of the year, and to wait for the averages will delay settlement.

14. A one to three weeks' vacation with pay; also a reasonable amount of time off for rest, recreation, and attention to personal and family affairs.

15. A trip to the annual farmers' conference at the state agricultural college with all expenses paid.

16. One-third to one-half of the premiums received at fairs. This might be used when purebred livestock is produced and exhibited.

This list of bonus suggestions is not all-inclusive. Many others are in use on farms in the central states. This may serve, however, as a guide to farmers who are interested in bonus arrangements.

J. B. CUNNINGHAM

LEGUMES AND GRASS IN FARMING SYSTEMS¹

In our approach to the subject of legumes and grass in farming systems we assume that the farmer has as his objective maximum returns from all of the resources that he has available. This means all of his land, his labor, his operating capital, and his managerial ability. It is the farmer's job, as a manager, to fit together and operate a farming program which results in high returns to all of these resources *in toto*. We also assume that the farmer is interested in long-time maximum returns and is therefore concerned with increasing and conserving the productivity of his resources.

Legumes, or legumes and grass, have an essential place in all of our farming systems and in all areas of Illinois. "To grow or not to grow" legumes and grass is *not* the question. But there *are* questions. How many acres of the farm should be in legumes and grass? How to get high and efficient production of legumes and grass? How to get high dollar returns from these crops? These are the real questions.

Legumes and grasses serve two primary roles in farming systems, although both roles may not be of primary importance on a given farm at a given time. These crops are (1) soil builders and (2) feed; and it is in these roles that we must consider them in the farming system. Legumes and grass may, of course, fill the role of cash crops, seed, or hay. This is definitely a secondary role from the standpoint of all Illinois farms, although it may be of primary importance on a particular farm.

The Place of Legumes and Grass on Rolling Land

Let us turn to specific Illinois areas and to systems of farming in those areas. First, to the rolling area of southern Illinois. Take a representative farm of 180 acres, all upland, with 60 acres in woods. According to land classification based on soil type, slope and erosion, 40 acres are adapted to a four-year rotation with a row crop one year of the four. The other 80 acres of cleared land are not adapted to row crops but to hay or pasture, cultivated only as it is necessary to reseed or renovate these forage crops. The farmer is actually growing 16 acres of corn, with 104 acres of hay and pasture. Seventy acres of the farm have been limed, and 50 of the 70 acres have also been phosphated. The untreated pastureland is partly covered with brush and broom sedge, and has a number of active gullies. Livestock includes ten beef cows of fair quality, two milk cows, one sow producing two litters a year, and 60 hens. Most of the farm's income is from the sale of beef cattle or calves.

¹ Adapted from a talk given at Farm and Home Week, University of Illinois, February 6, 1951.

We will agree that the operator of this farm has problems. And they are much the same as farmers have on all-rolling land in other areas. Can we put ourselves in his place as we look at some of these problems?

First, this is, and should continue to be, a grassland farm. The farmer has little choice but to build his farming around hay and pasture and to obtain his principal income from forage-consuming livestock. He does have a limited choice in the amount of grain he grows in a long-range program. He could maximize grain production with the 40 acres in a rotation of corn, small grain, and two years of legumes or a legume-grass mixture, and by growing small grain occasionally on some of the more rolling land. Or he could go more completely than he is now into a forage system, with all of his cleared land in hay and pasture. This limited choice of crops is a management decision of some consequence, but it is not of basic importance. In either case this would be a grassland farm. Furthermore, the one primary role of legumes and grass in this farming system is *feed* for livestock.

On the farm at present about seven acres of hay and pasture are required for each forage-consuming animal unit (one cow or its equivalent). This should be cut in two, or down to three or three and a half acres per animal unit. What has to be done to make this improvement?

Of 120 cleared acres, 50 acres have not been limed, and 70 acres have not been phosphated — in an area where these treatments are practically always needed. Chances are that potash is also needed. Needs for all of these treatments should be determined and deficiencies corrected.

Fifty acres requires brush removal and erosion control practices. This 50 acres must be renovated and seeded to high-yielding legume and grass crops. Pasture and hay land already partly improved needs reseeding.

These things are essential if our farmer is to maximize his returns: brush removal, erosion control, complete renovation and fertilization of unimproved land, further improvement of partially improved land, and seeding of well-adapted and high-yielding forage crops. The cash cost of such a program runs to a tidy sum that might come to \$2,500 to \$3,000.

Such land improvements will take time as well as money. But this is not all. There is also the problem of increasing livestock numbers to use the higher forage production, and of improving quality of the herd. If breeding stock is purchased in making these improvements, considerably more cash outlay will be necessary.

It is doubtful if our representative farmer has the cash reserves to pay for the essential improvements that we have outlined. Even under prevailing good prices it is also doubtful if he can squeeze these investments out of current income. But they are sound investments that can

be paid for out of increased earnings. If our farmer will make a plan, with a schedule of the amounts of cash needed, and a schedule of how and when he expects the investments to pay off, he should not have any trouble in getting a loan to finance his program.

There is one important aspect of this farm that we have not considered — the size of business. Will the farmer get from the farm an income large enough to adequately meet the needs of a good living for his family? Let's assume that he has made the improvements we have discussed, and increased his beef herd to use the increased forage production. With such a system of farming I would say that he will still have a small business, probably too small to adequately meet the needs of a typical family.

A good way to look at the problem of size of business is to consider the amount of labor employed in the farm business. On this farm the value of a year's work by the farmer and his family probably represents a more important resource than the land.

Using standard-labor requirements that fit the rolling area of southern Illinois this farm under its present system requires the equivalent of about 160 days of work per year. A "rule of thumb" used by some farm management men is that a farm unit that requires less than 300 days has little chance of having a large enough business. If our farmer increased his beef cattle to use all of his improved hay and pasture, but left other parts of the business as they are, the days of work required would still be not more than 200. Increasing poultry from 60 to 200 hens would add 25 to 30 days. If the beef herd were left as it is and ten milk cows added, along with the 200 hens, the work equivalent would be raised to over 300 days. The farmer would be reasonably well paid for his additional work. Other possibilities of productive employment for available labor could be found in setting up a good timber management program on the 60 acres of woods, and possibly in fruit or vegetable production. Of course, there is also the possibility of getting more acres to farm.

The Place of Grass and Legumes on Level Land

Consider, in less detail, the place of legumes and grass in farming systems under a different situation. Take a 240 acre all-tillable farm in east central Illinois. Erosion is a minor problem on this farm. With good management the land is suited to intensive grain production. On such land most farmers will make highest returns if they build their farming around grain production. This means that, for most farmers, the most profitable land-use system on this kind of land is one that is set up to give maximum total grain production over the long run. Please note that we did not say "highest grain yields per acre." We are not by any means suggesting that

nothing but grain crops should be grown. Legumes, or legumes and grass, have an essential role in getting and maintaining maximum grain production — most farmers on level productive land do not grow enough of them. But the basic role of legumes is different than on the all-rolling farm. On our level farm their primary role is that of soil building and fertility maintenance. Their role as feed crops is a by-product that may be developed into a very important one if the farmer so chooses.

In fact our level land farmer has choices that the man on rolling land does not have. He can follow a straight grain farming system, and it can be profitable if he really has a system that maximizes grain production through a soil fertility program and a rotation with enough legumes. Results of agronomy and farm management research do not conclusively indicate the kind of legume program needed to maintain highest grain production. It has been frequently stated that legumes should be grown on at least one-fourth of the acreage of our best land. This appears to be a valid recommendation, but we are not certain what part of this one-fourth of the land has to be in standover legumes and how much can be good catch crops.

Let us consider further the choices of farming systems available to the level land farmer. Most farmers will choose to produce some livestock on such a farm. The livestock program may be of secondary importance, only large enough to use the "by-product" forage produced by the legumes essential in the rotation. Or it may be on a large enough scale to feed a considerable part or all of the grain produced. The farmer can grow a larger acreage of legumes and grass than needed to maintain maximum grain production. And it may be profitable for him as an individual to do so, providing he can successfully manage a livestock program of the size necessary to use the additional forage crops produced. Some do not have, or do not care to acquire, the managerial ability needed to successfully manage such a livestock business.

We should look at a number of other angles to farming on highly productive land. For one thing we should remember that there are many more acres, in this country and in the world, that can profitably produce forage than can profitably produce corn and other grains. This is a fundamental reason for the situation that makes it most profitable for most farmers on land adapted to grain crops to build their farming around grain production. It is also a fundamental reason why farmers on land only moderately well adapted to grain production can afford to go to considerable expense for conservation practices and for fertilizers in order to grow grain crops on a relatively large part of their land.

Volume of business is not likely to be as critical a problem for our

level land farmer as for the man on the rolling land. We should note, however, that livestock is important as a means of increasing the size of business on many level land farms. We should add that manure, a by-product of livestock, may also be important in maintaining high grain production on such farms. There are some interesting relationships between the size of farm and system of farming. Although grain farms tend to be larger in acreage than livestock farms, there are some large livestock farms in areas of level, highly-productive land. Moderately large or large cattle feeding businesses are frequently found on large farms. However, the land-use program on such farms is usually one that maximizes grain production and not forage. This is a sort of two-story farming system — a livestock business built on top of what is essentially a grain system of land use.

Problems on All Types of Farms

We have discussed two widely different areas and some aspects of legumes and grass in farming systems in these areas. The problem has been over-simplified. There are areas in Illinois not described by these extreme conditions. The problem is further complicated by the fact that many farms have some land that is rolling and some that is level. In view of these variations it is particularly important that each farmer consider objectively the two primary roles — soil fertility and feed, either or both — that legumes and grass play in his own individual farming system.

Leasing problems. Farmers are asking many questions that could be summed up into one, "How can we get enough legumes and grass on rented land?" This is indeed an important question. Without developing it at all we venture a statement that the answer lies in two things. The first is a recognition, by both landlord and tenant, that what is a sound and profitable system of farming for one is also profitable for the other. The second is that, in working out an equitable sharing of expenses and income, due and objective consideration be given to the roles that legumes and grass play in the farming system — the roles of soil building, feed, and possibly cash crop.

Management is important. Finally, we should recognize the importance of management. In one respect legumes and grass in a farming system are no different than cows, or corn, or hogs. If these essential crops pay off as they should the farmer has to do a pretty good job of planning and managing the farm as a whole unit. The average Illinois farmer is not as skillful in getting dollars out of legumes and grass as he is in some other phases of his business.

We are seeing an increasing number of reports where farmers, or experiment stations, made very high returns from particular acreages of

legumes and grass. It could be argued that getting high returns from a particular part of the farm acreage is quite a different thing than getting high returns from the whole farm. It could also be argued that some of the returns from legumes and grass are not actually net returns although reported as such. But we would agree that the net returns are high enough to conclude that they are a real challenge and that more emphasis on legumes and grass provides a real opportunity for the farmer to make the most of his ability as a manager.

J. E. WILLS

SHORT-TIME PRICE FLUCTUATIONS ARE STILL POSSIBLE

There has been so much emphasis on inflation that farmers are likely to believe that prices will continue to rise to ceiling levels and stay there. They may do so, but there is a possibility that they will not. It is more likely that there will be occasional price declines followed by recoveries.

Recently it became difficult to find shipping space for export wheat. There was fear that the government would reduce its export subsidy on 60 to 70 cents a bushel on wheat shipped to major importing nations. The price of wheat declined following a rise that took place when ceiling prices were placed on soybeans and many industrial products. A news release mentioned unwillingness of housewives to pay current prices for beef just as prices of beef steers reached a new high. Such action, if the women really meant business, could disappoint some buyers of high priced feeder cattle. The Cuban government decided to liquidate holdings of sugar just at the season when grindings of a large crop were well under way. There was a temporary collapse of sugar prices in Cuba.

There is no danger of price collapses in certain very strategic commodities which are in relatively short supply. In some cases our price ceilings are so low that Russia is outbidding us in world markets — for wool, rubber and tin, for example. But for other commodities we are in a vulnerable position. The “pipe-lines” or channels of trade are filling. Consumption is being restricted by government order or high prices.

Britain and other European countries are diverting more of their effort to rearmament. That means less to export; hence fewer dollars to pay for imports from us, unless we finance them.

World-wide developments suggest a possible breathing spell in hostilities. Stalin's recent statement in Pravda, his controlled mouthpiece in Russia, suggests that Russia may not wish to take on any more bouts in the immediate future. The Communists are splitting into two factions in Italy and losing power in Western Europe. Our holding in Korea and the heavy casualties suffered by Red China tend to cool the enthusiasm of other would be aggressors. A peace “scare” is quite possible.

Developments at home suggest the possibility of a temporary let-down in domestic demand. We have committed ourselves to huge expenditures and have hesitated to tax high enough to pay the bill, but expenditures for the war and defense effort to date have been relatively small. In the meantime inventories are large and the shift from peace-time production to the production of war materials is proceeding slowly. Fortunately most large companies are retaining their full force on their payrolls in order to have trained workers when they need them. But some small businesses are hurt.

From the longer point of view the outlook for prices depends on how we finance the war effort at home and abroad. From all appearances we shall not tax heavy enough to pay our way once the orders being let for war materials get into production. That means that *farmers should not sell on dips*. The dips may come but they are not likely to last very long. Wheat is the only really vulnerable farm product and it is so essential in case of a world-wide holocaust that wheat prices will continue to receive support. Housewives will continue to bid up the price of beef so long as the family incomes, after taxes, remain at current high levels. The dip in sugar prices was very temporary.

Our government suggests more corn — one million acres more for Illinois; more wheat — an increase of 327,000 acres in Illinois; and a reduction of 198,000 acres of soybeans in Illinois. The corn is to produce more meat and livestock products for which a strong demand is expected. The wheat is for emergency stockpiles. So the outlook is for farmer prosperity in 1951 and 1952, but don't get excited if there are occasional dips in prices of some commodities.

G. L. JORDAN

Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ New series -- includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. ⁹ Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. ¹⁰ Federal Reserve Bulletin of Federal Reserve Board. ¹¹ Preliminary estimate. ¹² Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹³ Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.

H. P. Rusk

Director, Extension Service in
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CHAMPAIGN

TABLE A.—INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production ¹⁰
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period.....	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39		1939	1935-39
1934.....	93	86	76	96	79	68	71	80	68	75
1935.....	99	104	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	306	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	247	275	207	383	392	189	303	351	192
1949.....	192	218	218	200	343	346	176	308	325	176
1949 Nov.....	188	206	201	196	435	367	187	302	314	173
Dec.....	188	204	202	196	371	333	170	307	329	179
1950 Jan.....	188	204	201	198	337	379	190	314	329	183
Feb.....	190	209	209	198	240	307	155	320	330	180
Mar.....	190	210	209	200	247	325	163	327	334	187
Apr.....	190	210	213	200	232	258	129	319	337	190
May.....	193	217	226	203	266	332	163	319	348	195
June.....	195	218	226	204	275	285	140	323	363	199
July.....	202	232	241	204	353	393	193	326	368	196
Aug.....	206	234	240	206	383	344	167	333	394	209
Sept.....	210	237	243	208	437	339	163	339	403	212
Oct.....	210	234	235	208	538	549	264	342	416	217
Nov.....	213	242	240	210	484	429	204	342	...	215

TABLE B.—PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			Jan. 1950	Current months, 1950-1951		
	1935-39	1949	1950		Nov. 1950	Dec. 1950	Jan. 1951
Corn, bu.....	\$.66	\$1.17	\$1.35	\$1.18	\$1.44	\$1.53	\$1.60
Oats, bu.....	.31	.64	.76	.69	.84	.88	.90
Wheat, bu.....	.86	1.95	2.02	1.96	2.01	2.12	2.21
Barley, bu.....	.62	1.07	1.20	1.11	1.29	1.32	1.39
Soybeans, bu.....	.90	2.19	2.49	2.14	2.65	2.80	3.00
Hogs, cwt.....	8.52	18.58	18.08	15.00	17.50	17.70	20.10
Beef cattle, cwt.....	7.88	21.19	24.54	20.00	27.20	27.70	27.80
Lambs, cwt.....	8.36	23.43	25.06	22.00	27.30	28.10	30.90
Milk cows, head.....	58.00	198.33	216.67	205.00	230.00	230.00	245.00
Veal calves, cwt.....	8.66	25.05	28.01	26.30	30.80	30.50	33.00
Sheep, cwt.....	3.58	8.70	10.52	9.70	12.40	12.50	15.70
Butterfat, lb.....	.27	.58	.58	.60	.60	.60	.67
Milk, cwt.....	1.68	3.42	3.46	3.60	3.75	4.05	4.20
Eggs, doz.....	.19	.40	.31	.26	.39	.53	.35
Chickens, lb.....	.15	.27	.23	.21	.22	.23	.25
Wool, lb.....	.25	.42	.50	.42	.60	.63	.73
Apples, bu.....	1.08	2.38	2.24	1.80	2.10	2.30	2.30
Hay, ton ¹³	9.39	22.68	20.77	22.00	20.80	22.40	22.80

¹⁻¹³ For sources of data in tables see the preceding page.

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191 ILLINOIS FARM ECONOMICS

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Articles in This Issue

	PAGE
Marketing Concentrated Milk — R. W. BARTLETT.....	1133
Outlook for Foreign Markets for U. S. Farm Products — L. J. NORTON.....	1138
What Are the Costs of Dairy Housing? — R. N. VAN ARSDALL.....	1144
Effects of Future Trading on Grain Prices — T. A. HIERONYMUS.....	1150

MARKETING CONCENTRATED MILK¹

Savings ranging from two to six cents a quart, consumer acceptance of concentrated milk, and a recent United States Supreme Court decision breaking down trade barriers are likely to bring about far-reaching changes in the production and distribution of market milk over a period of time.

Concentrated milk is fresh whole milk from which most of the water has been removed. When mixed with two parts of water, it becomes equal to fresh pasteurized homogenized vitamin D milk with all the nutritional elements. According to Dr. Hitchcock of the National Dairy Products Corporation, a consumer panel in Wilmington, Delaware, showed that among more than 100 families who used this product regularly for several weeks, 95.7 percent of the individuals questioned could tell no difference between reconstituted "concentrated" milk and conventional homogenized milk.²

Possible savings ranging from two cents a quart in many markets to as high as six cents a quart in a few markets are made possible by shipping Grade A concentrated milk from midwestern areas to markets in the South and East. For example, it costs about four cents a quart to ship milk in carlots from Chicago to Jacksonville, Florida. In concentrated form it costs only one and one-third cents a quart to ship it this same distance (Table 1).

As time goes on, concentrated milk may also supplement sales of

¹ Adapted from a talk presented at the Dairy Marketing Conference, Farm and Home Week, University of Illinois, February 7, 1951.

² "Concentrated Milk." Pure Milk Association, December 1950, p. 9.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

TABLE 1.—ESTIMATED COSTS OF CONCENTRATING, BOTTLING, TRANSPORTING, AND SELLING CHICAGO GRADE A MILK THROUGH STORES IN SPECIFIC MARKETS COMPARED WITH REGULAR STORE PRICES FOR MILK IN THESE MARKETS, JANUARY, 1951

Market	Cents per quart										
	Prevailing butterfat test of milk sold ^f	Adjust- ment at 8.5 cents per one- tenth point ^g	Baggage passenger rate carlot one-third quart ^h	Store margin ⁱ		Total cost ^j		Regular ^k store price	Net difference ^l		Net difference straight 3.5 percent milk ^m
				Efficient	Average	Efficient	Average		Efficient	Average	
Chicago class I price — 3.5% milk, 70-mile zone ^a											
Hauling to Chicago ^b									\$4.109 (cwt.)		\$4.109 (cwt.)
Total per 100 pounds									.130		.130
Total per quart — cents ^c									4.239		4.239
Receiving, concentrating, bottling, storage — per quart ^d									9.12		9.12
Selling, icing, loading, unloading — per quart ^e									4.00		6.06
									2.00		2.00
Subtotal — per quart — cents									15.12		17.18
</											

^a As reported by the Chicago Federal Milk Market Administration, January 1951.

^b Estimate of F. J. Knox, sales manager, Chicago Pure Milk Association, in letter dated September 18, 1950.

^c Obtained by dividing the price by 46.5, the number of quarts per 100 pounds of milk.

^d The cost of 4.00 cents a quart includes 1.12 cents for concentrating milk on a three-to-one basis (estimate made by an efficient dairy company) and 2.88 cents a quart for plant operations, including cost of container (estimate obtained from another company). The cost of 6.06 cents a quart was obtained by subtracting the U. S. Department of Agriculture average condenser price paid farmers for November 1950 for the whole milk in a 14½ ounce can of evaporated milk from the manufacturers' wholesale price for a 14½ ounce can of evaporated milk, I. O. B. the manufacturing plant, November 1950 and increasing the volume to a quart.

^e Obtained from a dealer distributing whole milk in paper containers within a wide radius of his plant. In this computation it is assumed that the cost of performing a similar service per one-third quart of concentrated milk would be the same as for a quart of whole milk.

^f Shown in U. S. Department of Agriculture Fluid Milk Report, January 1951.

^g In January 1951 the Chicago butterfat differential was 8.5 cents per 100 pounds per 1/10 point of butterfat. This figure was multiplied by the difference between the prevailing butterfat test of milk sold and 3.5 percent milk, and divided by 46.5 to get a cents a quart basis. For example, Jacksonville's butterfat test was 4.2 percent, or 7 points above the 3.5 percent test. Seven times 8.5 cents divided by 46.5 equals 1.28 cents a quart.

^h From the Illinois Central, New York Central, and Pennsylvania Railroads.

ⁱ Difference between store price to consumer and wholesale price per single quart as shown in U. S. Department of Agriculture Fluid Milk Report, January 1951. When two wholesale prices were reported, the lower store margin was applied to the efficient operation and the wider margin to the average operation.

^j Under efficient operation, the cost of concentrating, bottling, transporting, and selling Chicago grade A milk through stores in a specific market, such as Jacksonville, was 15.12 cents plus 1.28 cents for the fat adjustment, plus 1.34 cents for transportation, plus a 2.00 cent store margin, or 19.74 cents a quart. Average cost for performing these same operations was 21.80 cents a quart.

^k Net difference between efficient and average operations.

^m Net difference between efficient and average operations.

regular milk in midwestern and western markets. Potential savings for these markets are likely to be much less than for markets in the South and East.

Costs of getting milk produced are lower in the midwestern surplus producing areas than in the South or East. For example, in January 1951 the Class I price for milk in Jacksonville, Florida, was 14.7 cents a quart, or 5.6 cents a quart higher than the Chicago Class I price (9.1 cents) for Grade A milk. This difference is partly offset by the concentration cost. Under efficient operations this cost is a little over one cent a quart (1.12 cents).

Over-all distribution costs are much wider in some markets than in others. For example, in January 1951, the dealer's gross margin for receiving, processing, bottling, storage, and selling and delivery of milk through stores in Jacksonville, Florida, averaged 11.3 cents a quart, or 3.3 cents higher than the average (8.0 cents) of 24 large markets in December 1950.

The store price for milk in Jacksonville in January 1951 was 26 cents a quart, over 6.0 cents more than it would cost, under efficient operation, to sell Chicago Class I Grade A milk in concentrated form through stores in Jacksonville. With efficient operation, it is estimated that concentrated milk could be shipped from Chicago and sold through stores at the following reductions under regular store prices: Miami, 5.22 cents a quart; New Orleans, 4.72 cents; Houston, 4.63 cents; Buffalo, 4.16 cents; Rochester, New York, 3.69 cents; Pittsburgh, 3.22 cents; Providence, 3.17 cents; Baltimore, 3.07 cents; Philadelphia, 2.55 cents; Boston, 2.07 cents; and New York, 1.38 cents (Table 1). If the fat content of milk were held down to 3.5 percent, even greater reductions would be possible.

*Both milk and cream for any market should be produced in areas where costs of getting them produced plus transportation costs are lowest.*¹ If farmers in Illinois, Wisconsin, or any other midwestern state can produce high-quality milk and transport it to Florida, Texas, or eastern markets more cheaply than it can be produced in these areas, it should be produced in the Midwest. Consumers are interested in getting high-quality products at reasonable prices. One reason for the high standard of living in the United States has been the application of the "law of comparative advantage," wherein goods are produced in low-cost areas. For example, Michigan and New York produce large quantities of high-quality apples, but no oranges; most of our oranges are produced in California or Florida, where the natural advantages of climate and soil result in low-cost production.

¹ *Illinois Farm Economics*, October 1948, p. 739 to 743.

Will the South and East permit midwestern Grade A milk in concentrated form to be sold in their markets?

Cream is already being shipped regularly from the Midwest to many eastern and southern markets, such as Boston and Miami. If the proper safeguards are taken to maintain quality, there would seem to be no logical reason why Grade A concentrated milk should not be produced in the low-cost areas of the Midwest and shipped to any market in the United States where such shipment is economically feasible. The validity of this reasoning is strengthened by a recent decision of the United States Supreme Court on the Madison case, released on January 15, 1951. This decision was reported by the Chicago Tribune as follows:

"The Supreme Court today invalidated a Madison, Wisconsin, ban on milk not pasteurized and bottled within five miles of the city. . . .

"The ban was contained in an ordinance which also bars milk not inspected by the Madison city health department. . . .

"The ordinance was attacked by the Dean Milk Company, which has pasteurization plants at Chemung and Huntley, Illinois, 65 and 85 miles, respectively, from Madison.

"The company's appeal contended the ordinance violated the interstate commerce clause of the constitution. It said its milk meets the health and other standards of Chicago and other cities. The company appealed to the high tribunal after Wisconsin state courts upheld the ordinance.

"The city in defending the ordinance, said the company's attack was the first time a claim was made before the Supreme Court that local governments 'should be deprived of their autonomy in the reasonable regulation of milk for the protection of the health of their citizens.'

"Clark said the high court majority agreed with the company that the provision relating to pasteurization and bottling imposes an undue burden on interstate commerce — 'an economic barrier protecting a major local industry against competition from without the state.'

" 'This (the city) cannot do, even in the exercise of its unquestioned power to protect the health and safety of its people, if reasonable non-discriminatory alternatives adequate to conserve legitimate local interests are available,' Clark said."

This decision by the United States Supreme Court is similar to decisions of the Illinois Supreme Court, *Higgins versus City of Galesburg* (1948), *City of Rockford versus Heg* (1948), and *Dean Milk Company versus Waukegan* (1949), which have upheld the legality of intermarket shipment of milk.¹ It may be that further court cases will be necessary

¹ *Illinois Farm Economics*, October-November 1950, p. 1073 to 1084.

before individual markets throughout the country are convinced of the full import of the decision in the Madison case.

From a public viewpoint, it is desirable to break down trade barriers, because such action tends to increase the per capita sales of milk and in turn improve the health of the people.

Following the decisions of the Illinois Supreme Court, eight Illinois markets reduced their store price of milk two cents a quart. Per capita sales in these markets in 1949 were 14.5 percent higher than in 1945.¹ During this same period there was a ten percent *decrease* in per capita milk sales in eleven eastern markets. One of the factors contributing to lower milk sales in eastern markets was the relatively high price charged consumers for milk.

Some of the advantages of using concentrated milk may be summarized as follows:

1. Store prices to consumers in many markets can be reduced as much as two to six cents a quart.
2. It is easier for the shopper who buys milk in a store and carries it home. The net weight of three quarts of regular milk is nearly six and one-half pounds; the amount of concentrated milk needed to make three quarts of milk weighs only two and one-fourth pounds.
3. Less refrigerator space is needed.

Some disadvantages are:

1. Extra work and time are required to mix concentrated milk with the right proportion of water.
2. Most people have a "no" complex in regard to using any new product. Until recently most concentrated milks have had a cooked flavor, and many people are still skeptical of this new product.
3. Under efficient methods of operation, it costs about one and one-eighth cents a quart to concentrate milk on a three-to-one basis. This extra cost must be offset by savings in other places.

The advantages of using concentrated milk appear to far outweigh the disadvantages. Looked at broadly, the sale of this Grade A product at a price substantially lower than the present price of milk will tend to benefit farmers and dealers as well as consumers. Higher per capita sales resulting from lower prices will tend to improve the diets and health of consumers. Dairy farmers in the country as a whole will sell a larger proportion of milk at the Class I price. And, finally, larger sales will make possible lower unit costs to the dealers who handle this product.

R. W. BARTLETT

¹ *Illinois Farm Economics*, October-November 1950, p. 1073 to 1084.

OUTLOOK FOR FOREIGN MARKETS FOR U. S. FARM PRODUCTS¹

Our markets for farm products have been dominated by inflationary forces since the Korean affair launched the U. S. into war. Producers, consumers, and the trades were apparently convinced that this military action meant higher prices. Money has been available to translate this belief into market demands. So prices have risen sharply. So the question may be raised as to whether it is even worth while to look at some of the other factors back of our markets. The topic assigned me was the foreign market. Does it really make any difference whether foreigners take our goods or not if Americans are determined to bid up prices? I still believe it is worth while to look at all market facts: *such as supplies and real effective demands that will move goods into and through market channels.* Some eight to ten percent of our farm products are disposed of in foreign markets. Commodities now sold abroad in important quantities include soybeans and soybean oil, corn, animal fats, wheat and dairy products. We produce all these here in Illinois.

In discussing this topic I have made the following assumptions: (a) the western Europe market will not be cut off from the U. S. in 1951; (b) western Europe will not heavily stock-pile agricultural products in anticipation of war; (c) we will continue to supply Japan with agricultural products in somewhat larger quantities than would have been the case without the Korean war; and (d) nothing comparable to lend-lease will develop.

During the past year a great change occurred in the foreign trade of the U. S. Since July we have imported nearly as many dollars worth of goods as we have exported. This contrasts with an export balance of \$3.1 billion for the fiscal year 1949-50. What caused this remarkable change?

(a) Higher prices for and larger physical imports of the raw materials and crude foodstuffs which loom so large in our imports.

(b) The official devaluations of many foreign currencies in September 1949 made our goods more expensive to foreigners. So they bought less here.

(c) These devaluations also made some foreign goods cheaper here and so made sales to us easier.

(d) The steady rise in world output made more goods available for sale here.

(e) The policy of the Sterling area (the U. K. and the countries closely related to it in trade and monetary matters) of building up dollar

¹ Adapted from a talk given at Farm and Home Week, University of Illinois, February 5, 1951.

balances for monetary reasons led them to restrict severely purchases in dollar markets.

As long as general inflationary tendencies exist in the U. S. our markets will be magnets which attract foreign goods. Likewise our high prices may tend to retard our exports. So our foreign trade in the period immediately ahead will likely be much more closely balanced than it was from 1945 to 1950.

So what? This development will tend to reduce the scope of our foreign aid of the Marshall Plan type, otherwise the effect of such aid will be that foreign countries merely build up dollar balances. Substantial progress has been made in building up such balances during the past year. On January 1 we suspended Marshall aid to the U. K., the largest recipient of such aid. Our increased imports will make it more nearly possible for the outside world to earn the dollars needed to buy goods here.

In addition to a closer commodity trade balance, large direct capital investments in foreign lands are being planned by American firms. The plans of U. S. steel in Venezuela and our continuing investments in Canada are illustrations. Such investments tend to make dollars available to foreigners.

Our altered trade position will hasten the day when other currencies will be more readily convertible into dollars and when trade balances will be settled by nondiscriminatory, multilateral trade. This will not come during 1951 but in the absence of general war, the web of international trade will continue to be rewoven. For example, raw material producing countries like Australia, Malaya, Brazil, and Venezuela will build up dollar balances by sales here. European countries may earn some of these dollars by sales of manufactured goods to these countries. They may spend the dollars here for needed goods.

However for 1951 the principal importers of our agricultural products will continue to limit their purchases in this country to: (a) what they cannot obtain elsewhere; (b) what they have most urgent needs or demands for; and (c) what they consider to be bargains.

In 1949-50 our agricultural exports totaled \$3.0 billion or about 10 percent of our total farm output. The total was 20 percent less than in the previous year, reflecting in part lower prices and, in part the increasing availability of needed supplies in other areas. Who were the buyers? Our 10 leading customers were:

1. Germany.....	\$536 million	6. France.....	\$155 million
2. Japan.....	339 million	7. Netherlands.....	146 million
3. U. K.....	269 million	8. Cuba.....	115 million
4. Canada.....	223 million	9. Belgium.....	110 million
5. Italy.....	167 million	10. India.....	75 million

Six of these are in Europe; two in Asia; two in North America. The importance of foreign aid in financing our exports of farm products is obvious. All but two of the countries on this list, Canada and Cuba, received foreign aid. As this aid lessens the key question will be: can these countries earn the dollars needed to buy here either by direct sales to the U. S. or by multilateral trade? The answer to this question is: if we continue to import nearly as much as we export as we have in recent months, *it is possible*.

But under either situation, that is, (1) continued aid or (2) imports or investments by U. S. which provide means of payment for exports, foreigners will take only what they really need and cannot obtain elsewhere, or to a more limited extent in order to convert dollars into physical assets.

What do they actually buy? In 1949-50 the top 11 commodities or groups of commodities exported were:

1. Cotton and linters.....	\$949 million
2. Wheat and flour.....	695 million
3. Tobacco.....	235 million
4. Corn and corn meal.....	165 million
5. Dairy products.....	113 million (of which evaporated milk, nonfat dry solids, and dried whole milk were the most important)
6. Fruits and preparations.....	108 million
7. Animal fats.....	105 million (of which lard was most important)
8. Vegetable fats and oils.....	92 million (of which soybean oil made up \$44 million)
9. Rice.....	72 million
10. Vegetables and preparations.....	58 million
11. Soybeans.....	44 million

Note that cotton and wheat together make up over half of the total.

In the midwest we are primarily concerned with wheat, corn, soybeans, soybean oil, lard, and dairy products.

What are the prospects for continued exports?

1. *Cotton*. Currently our supplies are so limited that we have to ration exports. We could sell more cotton if we had it. There is a strong demand for U. S. cotton. World supplies are short in relation to effective demand.

2. *Wheat and flour*. Our prices are too high to encourage sales much beyond the subsidized quantities covered by the International Wheat Agreement. How much we sell will depend primarily on supplies in western Europe, Canada, Australia, and Argentina and the desire to convert

dollars into goods at the subsidized price. I expect exports in 1950-51 to be below those of 1949-50. Poor crops in Europe in 1951 would alter this in 1951-52. Factors which may help to maintain exports are the low quality of the 1950 Canadian wheat crop, a somewhat smaller crop in Australia, a less promising crop in Argentina than was earlier indicated, and poorer crops in eastern Europe.

3. *Tobacco*. There are strong preferences for various types of American tobaccos. Large scale exports are likely to continue.

4. *Corn*. The \$165 million bought 110 million bushels of American corn. This reflects the need for feed in Canada and Europe where livestock production and dairying are expanding rapidly, and the shortage of exportable corn in Argentina. Factors which may diminish these exports are the availability of cheap feed wheat in Canada and sorghums in the U.S.A., our high prices, and a bigger 1951 crop in Argentina. It is now the calendar equivalent of the first of August in that country.

5. *Dairy products*. Our trade in these items with the tropical countries will likely be maintained; that with Europe will likely decline. On balance we will likely sell a substantial but somewhat smaller volume of dairy products.

6. *Animal fats*. This is largely lard and tallow, by-products of our meat supply. The lard goes largely to two areas: Latin America and Europe. The former will continue to buy but the increased hog population in Europe reduces needs there. Our largest customer for lard in 1949-50 was Germany. Food fats tend to be hoarded in periods of uncertainty and this may tend to hold up sales. For tallow we have developed a broad market since the war. It is very widely distributed. If supplies are available here, I would expect large exports to continue. Since Korea great strength has developed in the markets for inedible animal fats. This has tended to push up the price of lard. This higher price of lard has been an important reason why a larger supply of hogs has sold at a higher price in the early winter of 1950 than in 1949.

7. *Vegetable fats and oils*. Exports to Canada to supply a growing margarine industry will likely continue. To Europe our exports will depend on the extent of the hoarding of supplies of fats and the availability of liquid food oils from other sources. A key question is: How many soybeans will come from North China and Manchuria? Shipments on a considerable scale were said to be getting under way. The war in Korea will likely reduce any such movement. This circumstance will tend to maintain our exports of soybean oil and soybeans. The Mediterranean area has a smaller olive oil crop. This tends to create another gap which may attract American vegetable oils.

8. *Vegetables and preparation.* This covers a wide variety of products. Soybean flour is included under this heading. In 1948-49 we exported 336 million pounds, equivalent to about 7 million bushels of soybeans; in 1949-50, only 19 million pounds, or less than the equivalent of half a million bushels of soybeans. This went largely to Germany. Efforts to make an ersatz sausage using this product do not appear to have been very successful.

9. *Soybeans.* For the last two fiscal years exports of soybeans have averaged about 17 million bushels, a substantial fraction of our crop. These went to Europe, Japan, and Canada, in that order. The total exports of beans and oil in oil equivalent last year was about one-fourth of our crop. Recent information suggests that these may continue. The olive oil crop in the Mediterranean area is much shorter than last year. These create a demand for "seed oil" for which soybeans may be used. A key question is: How many soybeans will come to Europe from Manchuria and North China?

In summary our strongest export positions are in cotton, tobacco, and rice. But I would expect to see exports operate as a sustaining factor in the markets for corn, animal fats, vegetable oils, and fruits in the coming year.

We now have figures for the first five months of the 1950-51 year. How did exports of these commodities fare? The following refer to dollars, not quantities:

Cotton and linters — up about one-third;

Wheat and flour — down over 50 percent; expected to be larger for balance of year;

Tobacco — up about 10 percent;

Corn and corn meal — down about 15 percent;

Dairy products — down about 40 percent;

Fruits and preparations — up about 20 percent;

Animal fats — up about 10 percent;

Vegetable fats and oils — down about 10 percent;

Rice — up by about 60 percent;

Vegetables and preparations — about the same;

Soybeans — down about one-third but higher in December.

The large decreases for the five months were in soybeans, wheat, dairy products; the large increases, in cotton and rice. An inference is that the foreign markets are becoming increasingly selective.

The above observations involve certain assumptions made at the start: (1) western Europe will continue in our market area; (2) no heavy stock-

piling of food in western Europe; (3) we will continue to supply Japan with agricultural products in somewhat larger quantities than if there had been no war in Korea; and (4) there will be nothing comparable to the lend-lease of World War II period. Should, as seems unlikely to me, western Europe be occupied by Soviet forces it would cut exports straight across the board. Should western Europe begin to stock-pile foods in larger quantities, it would be mainly in grains and fats. The situation is now quite different than when we entered World War II in 1941. Then we had allies which were already heavily engaged when we entered the conflict. Some people think we will have to furnish big supplies to Korea, but south Korea is an agricultural area. The 1950 crops were apparently harvested. In 1949-50 our agricultural exports to that country were only \$8.2 million. No one knows now (early February 1951) how large a portion of Korea we will continue to occupy. In any event it does not look like a big outlet.

An important point to bear in mind is that exports of agricultural products are largely to developed industrial countries — western Europe, Japan, and Canada or to smaller countries which have developed means of payments in dollars such as Cuba, Venezuela, and the Philippine Islands.

There is much talk of India as a market. She has millions of people, not too well fed. In 1949-50 we sold her \$75 million of agricultural products. If we sell more it will mainly be cereals — ranging from grain sorghums to wheat. But India is poor. She has the choice of buying food or buying machinery for land development aiming at growing more food. To get ahead, she must choose the latter. She will likely do so. There is currently pending a proposal to give India about \$200 million of wheat as a famine relief measure. If this materializes India will temporarily be an important outlet. Congress is now considering the matter.

By and large, the prospects for exports of agricultural products depend on (a) availability of dollars to prospective customers; from now on these will depend more and more on our imports and foreign investments rather than on our foreign relief; (b) availability of supplies here or elsewhere; (c) our price policies. If we over-price our products either by government price support programs or by inflation it will reduce sales unless we subsidize exports. In order to sell our wheat, \$115 million is now included in the federal budget to pay the required subsidy.

How about imports? In 1949-50 we imported \$3.2 billion of products of agricultural origin, mostly commodities we do not produce. These will tend to increase in value with higher prices and consumption here and larger world supplies. The imports of the most important commodities which we did not produce in 1949-50 were:

1. Coffee.....	\$870 million
2. Rubber.....	261 million
3. Cocoa beans.....	133 million
4. Carpet wool.....	108 million
5. Bananas.....	56 million
6. Tea.....	51 million

Of the competitive imports the most important were:

1. Sugar.....	\$348 million
2. Other wool (than carpet).....	220 million
3. Copra and coconut oil.....	87 million
4. Hides and skins.....	85 million
5. Tobacco.....	73 million
6. Cattle.....	66 million
7. Beef.....	52 million

How many of these things would you wish to do without?

Imports of agricultural products will likely increase. In July-October 1950 such imports were two-thirds larger than a year earlier. The strong U. S. markets and high prices act as magnets to draw goods to us. These will furnish dollars to foreigners who can use them either to build up currency reserves or to buy goods here. Time after time in western Europe in 1949 people told me, "Our economic future depends on how good a market you maintain in the U. S." Certainly in the last year we have done a good job in this respect. Whether these dollars will be translated into better foreign outlets for our surplus agricultural products will depend, as I said before on: (1) relative supplies here and elsewhere; (2) relative prices here and elsewhere; (3) intensity of foreign needs for our goods. On balance in the year ahead we will likely sell smaller physical quantities than in the past year.

L. J. NORTON

WHAT ARE THE COSTS OF DAIRY HOUSING?

A recent analysis based on a study of 350 Illinois dairy farms in the Chicago and St. Louis milksheds indicates several major problems associated with dairy housing.¹ The annual cost for buildings is one of the

¹Cooperating agencies in this study "The Economics of Service Buildings on Illinois Dairy Farms" were the Bureau of Agricultural Economics, the Bureau of Plant Industry, Soils, and Agricultural Engineering, and the Illinois Agricultural Experiment Station. The project was financed in part by funds allocated to the Bureau of Agricultural Economics under authorization of the Research and Marketing Act of 1946.

more important of these problems. Although this cost is usually not nearly as large as the costs for feed and labor, it is important because it represents the purchase of services that affect the efficiency with which labor and feed are used. Costs may be high or low and services may be good or poor, but high costs do not necessarily buy the most useful services.¹

Farms surveyed. A general description of the dairy enterprises included in this study will be useful for pointing out the problems to which the data apply, even though the general relationships indicated here are applicable to most dairy enterprises. Farms on which ten or more cows were milked during 1947 were selected for the survey. The average number of dairy animal units per farm was 32 in the Chicago area and 23 in the St. Louis area.² Cows in production comprised approximately 70 percent of the total dairy animal units in the Chicago area and 67 percent in the St. Louis area. Large breeds of cows predominated; there were only 22 Jersey herds. Three hundred and forty farms sold milk in bulk form; 8 sold butterfat; and 2 sold milk on the retail market. Grade A milk was produced on 241 farms; Grade B on 60; milk that was not classified on 41; and butterfat on 8. Thus these farms were generally characterized as having commercial dairy enterprises with large breeds of cattle and as marketing relatively high-grade milk in bulk form.

Direct building costs. Buildings chargeable to the dairy enterprise include the dairy barn, the milkhous, and any other buildings or portions of buildings that house dairy stock or that serve as storage for dairy feed. For purposes of this article the annual charges or direct costs for the use of these buildings cover interest on the initial investment, depreciation, and cash expenses for repair and maintenance.³ Thus as presented here, annual charges for interest as well as for depreciation were considered to be a fixed amount determined by the size of the original investment and the durability of the structure. This is done to make all buildings comparable as to cost, irrespective of age.

Repair and maintenance costs fluctuate widely from year to year, extensive repairs usually coming at irregular intervals. But eventually all of these costs, both cash and non-cash, must be covered or the enterprise will cease to exist, as good management will find more profitable

¹ All costs in this article are based on 1947 price levels.

² One dairy animal unit is the feed-consuming equivalent in dairy stock of one mature cow.

³ The current position of any individual dairyman would of course be reflected by an interest charge based on the current (depreciated) value of the buildings. Such an interest charge plus the annual depreciation and the cash expenditures for normal maintenance and repairs would be the actual annual building cost in any given case.

uses for investment and operating capital. Therefore, we may consider that an average annual payment covering all of these costs must be made for the services of buildings.

Under postwar price conditions dairy building costs have been about ten percent of total dairy costs.¹ However, some farms have building costs which exceed 20 percent of total dairy costs while others have received efficient service at costs considerably less than ten percent of the total. The situation is difficult for those with extremely high costs because about 80 percent of these costs were fixed when the buildings were constructed. Over a period of time, cash expenditures for repair and maintenance average about 20 percent of total building costs. Neglect of this building upkeep will accelerate the rate of depreciation and is a poor substitute as a means of reducing building costs.

Total annual dairy building costs on farms in this study averaged \$24 per dairy animal unit, ranging from a low of \$8 to a maximum of nearly \$62. This average cost represents about \$34 for each producing cow as dry cows, young stock, and other dairy animals comprised about 30 percent of the total dairy animal units on these farms. Table 1 shows the relative importance of direct building costs compared with other dairy inputs.

TABLE 1. — COSTS OF OPERATING DAIRY ENTERPRISES IN THE CHICAGO AND ST. LOUIS AREAS, 1947 PRICE LEVELS^a

Item	Chicago area			St. Louis area		
	Per farm	Per DAU ^b	Per cow	Per farm	Per DAU ^b	Per cow
Buildings ^c	\$ 727	\$ 23	\$ 33	\$ 558	\$ 24	\$ 36
Equipment.....	165	5	7	137	6	9
Stock.....	413	13	19	207	9	13
Feed ^d	6,123	194	277	4,155	179	267
Labor ^e	1,097	35	50	921	40	60
Total.....	\$8,525	\$270	\$386	\$5,978	\$258	\$385

^a Data from 182 farms in the Chicago area and 147 in the St. Louis area.

^b Dairy animal units account for all dairy stock in the herd including calves, heifers, other young stock, bulls, and producing cows. One dairy animal unit is the equivalent of one mature cow.

^c These costs are equivalent to 6½ percent of the original investment.

^d Both farm-grown and purchased feeds are charged at market price. At 1947 prices, feed costs are materially less if the farm-grown portion is charged at cost of production on the farm.

^e Rates of \$150 per month in the Chicago area and \$120 in the St. Louis area were charged for operator and family labor. Actual costs of hired labor were used in both areas.

What do your cows pay for buildings? Perhaps you have overinvested in buildings so that other farm enterprises must bear some of the dairy housing costs. Or perhaps you have efficient buildings which render service at a cost the cows can "afford" to pay. In any event, definite charges must be made against the dairy enterprise for the use of housing and feed storage facilities.

¹ Average annual building costs, including charges for interest, depreciation, repair, and maintenance, were considered to be equivalent to 6½ percent of the original investment.

If you were the average dairyman in this study, and had followed the usual building patterns, you would be likely to have initial dairy building investments of \$500 or more for each producing cow in the herd. If interest each year is based on the original investment in buildings, the total annual charges including depreciation, repair, and maintenance will average $6\frac{1}{2}$ to 8 percent of the original investment each year for the life of the buildings. If we assume that a group of buildings will have an average life of 40 years and that the initial investment is \$500 per cow, we have committed each cow and her replacements to a total payment of between \$1,300 and \$1,600 over the 40-year period, or an annual charge of \$32 to \$40 per cow. As previously stated, about 80 percent of this amount is relatively fixed by the characteristics of the buildings. The amount of investment determines interest charges while depreciation varies with the durability of the structure and the care it receives. Capital additions will increase interest charges and neglect of upkeep will increase the rate of depreciation, but there is little opportunity for lowering these costs once construction has been completed. These facts emphasize the importance of deliberation, planning, and foresight in making new constructions or in buying a farm with existing buildings. Some farms in this study had annual building costs nearly three times these amounts, but with proper planning and construction the average annual cost of buildings per cow can easily be from \$15 to \$20 or even lower.

In this example the original investment represents only about one-third of the total payment which must eventually be made for the services of buildings. Each dollar invested in buildings should be returned by the enterprises for which they are used. Otherwise, capital will have been lost and will have to be replaced from some outside source. For every dollar of building investment the dairy enterprise will be required to furnish an additional two dollars for interest, repairs, and maintenance over the life of the buildings.

How rapidly has progress been made in attaining efficient service with more favorable balances between building costs and total dairy costs? Some farms are maintaining good production of high-quality milk with building costs which are five percent or less of total dairy costs. Improvement has been slow chiefly because of the permanent character of most dairy buildings, the size of the initial investment required for conventional types, and the close adherence to long-established patterns for building dairy barns. A comparison was made between the composition of total dairy costs on farms having buildings constructed within the last 15 years and those with buildings of all ages, many exceeding the 50-year mark. The newer buildings were probably built by the present operator; they

were constructed under most of the conditions of present technology as regards farm power and methods for storing hay, and their present use is somewhat similar to the original plan. For these and other similar reasons we might expect that the farms with newer buildings would have lower building costs relative to total costs, especially in view of the developments that have occurred in low-cost housing in recent years. However, differences between these two groups were not in evidence as building costs were 8.9 percent of total costs on farms with buildings of all ages and 9.0 on farms with the more recently constructed buildings. Furthermore, the functional ratings of the newer buildings were no higher than those of the older ones in so far as characteristics influencing efficiency in the use of feed and labor are concerned. These observations indicate that in general our new buildings have associated costs comparable to those for buildings which would fulfill the needs that existed or that appeared to exist 30 or 40 years ago.

Indirect building costs. As direct building costs usually comprise only about ten percent of total dairy costs their effects on net returns in this form are relatively small compared with the effects of feed inputs which commonly exceed 60 percent of total cost.¹ However in many instances, the actual building costs represent a minor influence in the success of dairying compared with the indirect effects of over-all building characteristics. Buildings exert their influence on other production costs on the volume of production, and on the price received for milk.

An important and perhaps the most obvious of these indirect effects is labor requirements. Improper layout of buildings on the farmstead and inefficient interior arrangement may cause dairy labor requirements on one farm to be more than double those on another farm. Recent studies have shown that remodeling of inefficient buildings for best arrangement of work areas has reduced labor requirements by as much as 50 percent. This is a real saving considering that dairy labor costs on the farms in this study averaged 15 percent of total dairy costs, an amount 50 percent larger than actual building costs. Furthermore, efficient utilization of labor is of particular importance during labor shortages. Low unit labor requirements make possible maintenance of the present herd with less labor or operation of a larger herd with the present supply of labor.

Buildings may alter the amount of feed required, as well as both the quantity and quality of feed available. For example, improperly constructed mangers and bunks cause waste of valuable feed. Also, low-quality roughages may result from poor curing and storage facilities. If not properly protected, the feeding value of grains and mixed feeds may

¹ Direct building costs include interest on the investment, depreciation, and cash expenses for repair and maintenance of dairy buildings.

be damaged by weather, rodents, and insects. Best results also require that an adequate supply of water be present in a convenient location. Services which adequately meet all of these requirements can be furnished for a wide range of costs.

Adequacy of space per cow and proper arrangement of the feeding and bedding areas affect production and health of the animals. Conversely, waste space adds to cost without contributing to production or returns. Unused space may even add to the labor requirements per cow. Narrow gates, high curbs or steps, loose hinges, protruding nails, smooth finished floors in the cow area, and other such hazards may seriously reduce the productive capacity of a herd. Consider the effects on returns of a broken leg or a severely damaged udder on one of your best cows.

Fresh air with elimination of drafts and excess moisture is another requisite for healthful conditions. Often it is the higher cost buildings that show evidence of condensation, dampness, and poor ventilation.

A further and very important consideration is the relation between building characteristics, milk quality, and price. Milk that contains a large amount of foreign matter or bacteria will not receive top prices. Income will thereby be reduced, even though the dairy organization is otherwise highly efficient. The selling price of milk may have a greater effect on profits than all costs of production. Buildings and equipment should be constructed so as to permit the production of milk that will qualify for the best market available. Management practices followed in milking and in handling milk are important in determining the quality of milk, but the peculiar character and arrangement of buildings limit the degree of perfection that can be attained. Also, the best managerial efforts to obtain the highest prices will be fruitless if the barn and milkhouse do not meet minimum Grade A requirements of the specific market. Meeting these requirements need not cost as much as is frequently spent. Both the effectiveness of the many dairy inputs, such as feed and labor, and the ability of dairy farmers to obtain the benefits of the higher prices received for Grade A milk are influenced by the physical characteristics of buildings. If they could be measured accurately, in most instances the sum of all these indirect effects would be of greater importance in dairy costs and returns than the actual money costs for buildings.

Buy services for low cost. We have seen that the total effect of buildings on dairy returns is felt not only through direct money costs for the use of buildings, but also through the influence of building features on other dairy costs, production, and price. The problem is to get low-cost housing that serves the enterprise efficiently. Low direct building costs are secondary to obtaining buildings that minimize other dairy costs and maximize returns; however, the two objectives can be attained

together. This was emphasized in the study by the fact that on a fifth of the farms in the lower 20 percent with respect to dairy returns per dollar of dairy costs, building costs represented less than 7.5 percent of total dairy costs. The same proportion of farms in the upper 20 percent had building costs that were less than 7.5 percent of the total cost.

There are two similar approaches to this problem of combining low cost and serviceability, one for the new builder, and another for the farmer with old buildings. The beginning builder can establish both direct and indirect building costs at many different levels, depending upon the amount of investment and the care exercised in planning internal arrangement and external layout. But once buildings have been completed, the greater portion of the direct building costs are fixed. To change indirect building costs in favor of more efficient operation and higher returns usually requires additional outlay of capital for remodeling. If buildings are not efficient, proper remodeling will make possible savings in labor and other inputs, as well as probable gains from higher prices, which may return the additional outlay many times throughout the life of the buildings.

When considering the housing costs associated with your dairy enterprise remember: (1) buildings will affect returns directly as money costs and indirectly through their influence on other dairy costs, production, and price; (2) the indirect effects of buildings on returns are usually more important than the direct effects; (3) low direct building costs and a high degree of functional efficiency are compatible; (4) direct building costs are largely fixed by the amount of the original investment and durability of the structure, and neglect of repair and maintenance is a poor method for reducing costs; (5) favorable direct and indirect building costs can be most easily established through deliberate and careful planning before buildings are constructed; however, worthwhile reductions in indirect costs can be obtained through proper remodeling of present structures. Problems of attaining efficiency and economy of investment in new buildings, remodeling of inefficient buildings, and conversion of general-purpose buildings for dairy uses are to be examined in subsequent articles.

R. N. VAN ARSDALL

EFFECTS OF FUTURE TRADING ON GRAIN PRICES¹

Basic economic conditions determine the level of prices. The mechanics by which the price is worked out are also of interest. The process can be illustrated with soybean pricing. Manufacturers of shortening, margarine,

¹ Adapted from a talk given at Farm and Home Week, University of Illinois February 6, 1951.

rine, salad oil, paint and varnish oils, etc., can estimate rather accurately how much they can get for their products and how much their competition will let them charge. They know how much they can pay for refined soybean oil and show a profit on their operations and how much they must pay to get oil away from their competitors. At the same time refiners know how much they can get, how much they can afford, and how much they must pay. These things determine the prices that soybean processors are offered for crude soybean oil.

Feed manufacturers know how much they can get for mixed feeds and how much their competitors will let them charge. From this feed price they can calculate how much they can afford to pay for soybean meal and how much they must pay to get it away from other feed manufacturers. This determines the prices that processors are offered for meal.

The price that farmers are offered for soybeans is equal to the amount that processors can get for the oil and meal minus processing charges, costs of getting soybeans to processing plants and elevator handling margins. Processors would like to charge more for processing than they do but cannot because they must meet the competition of other processors. If they attempt to charge too much they cannot get soybeans. Elevators would like to charge wider margins but other elevators will not let them. The basic economic factors are interpreted into price by a series of trades at the different levels of marketing.

Cash grains are priced on the basis of futures prices. The price of No. 2 cash corn at Chicago moves up and down with the price of the dominant or ruling future. Terminal grain companies buy and sell on the basis of the difference between cash and futures prices. This basis is usually relatively small and changes from time to time. Country elevators offer prices for corn that are equal to the futures price, plus or minus the Chicago basis, minus the freight cost to Chicago, and minus their handling charges.

It seems reasonable that the people in the middle, at terminal points, are in the best position to weigh all of the factors and adjust the price so that there is enough to go around and last the year out but so that none is left over. The center of the marketing system is the logical point to bring the price-making forces into focus and thereby establish a price that can be reflected back to producers and forward to consumers.

However, such firms will not take market positions. To play a role in price determination it is necessary to take a market position; to buy and sell and to be long or short. The grain trade has turned over the job of pricing grain to the futures markets. The process by which this is done is one of shifting risks by hedging. In principle, hedging is a simple process. It consists of offsetting cash positions by taking opposite positions in futures markets.

Let us say that a country elevator owns 5,000 bushels of corn for which it paid \$1.65. It is long corn. To offset the risk of a price decline it may sell 5,000 bushels of May corn at \$1.76. Suppose that by the time the elevator sells its cash corn the price has declined to \$1.60. It loses five cents per bushel on the cash transaction. It must then buy back the May corn. If the cash and futures prices have moved down together as they usually do, the elevator can buy the futures contract back for \$1.71 and will have made five cents on the futures transaction. The only chance of making or losing money the elevator takes is that of a change in the cash and futures relationship or a basis risk. Whoever bought the futures contract took the risk and influenced the price. The elevator does not care whether the price goes up or down and so cannot affect the price.

It appears then that the futures markets register the prices of grains and are therefore of major interest to farmers.

Fundamentals of futures trading. Three basic points are essential to an understanding of futures trading. The first of these is that someone must speculate.

Grain marketing is basically a speculative business. The prices of grains fluctuate through wide ranges. Grains, including soybeans, are harvested during a period of a few weeks and are consumed at a fairly even rate throughout the year. Someone must own them from the time they are harvested until they are consumed, and that is a speculative proposition; speculation is an essential part of grain marketing.

The second point is that futures markets grew out of a need for shifting risks, that risk-shifting systems preceded futures trading and are bound to exist, whether they are formal, as in such markets as the one at Chicago, or whether they are disorganized and informal. It is possible to separate risk-bearing from other grain marketing jobs, and systems for doing so developed naturally.

The third basic point about futures trading is that premiums must be paid to get people to assume risks and that people differ in their willingness and ability to carry risks and accordingly in the size of risk premiums that they require.

If an individual were to buy some corn to hold he would have to get it *cheaper* than he thought he could sell it for later. Feed manufacturers indicate that they build up inventories only when they can buy for *less* than they expect to have to pay later. People speculate only when they expect to sell or buy later at a profit. It is necessary to pay a risk premium to get people to speculate.

Different people or firms require different risk premiums. They vary in their willingness and ability to carry risks. A few people enjoy specu-

lating and will do so without expecting a profit; others will not speculate at all. Some people have a large capacity to absorb losses, and others have little or none; that is, some people can afford to speculate and others cannot. Banks typically disapprove of speculating in grain with borrowed funds.

Generally speaking, firms engaged in doing the ordinary grain marketing jobs of buying, selling, storing, processing, etc., are not logical risk bearers. They operate on rather narrow margins and so do not have large earnings with which to speculate. Their funds are usually tied up in their ordinary operations, and they prefer regular earnings to irregular ones.

Risking in soybean marketing. These fundamental notions about futures trading can be illustrated by risking in soybean marketing. In the past farmers have sold a high proportion of their soybeans at harvest time. They sold 76 percent of the 1947 crop and 69 percent of the 1948 crop at harvest. On January 1, 1948 they held 19 percent of the 1947 crop; on January 1, 1949, 34 percent of the 1948 crop; on January 1, 1950, 28 percent of the 1949 crop, and on January 1, 1951, 34 percent of the 1950 crop. By January 1 of each year only about 25 to 30 percent of the crop has been crushed. The difference between the quantities that farmers hold and those uncrushed are large. It illustrates the first basic point that someone must speculate.

Most of the supplies that are not held by farmers are owned by soybean processors. They will not and cannot carry many of these supplies unhedged. Before the past year or year and one-half the soybean futures market was not a very satisfactory hedging market. Processors shifted their risks by selling oil and meal to oil refiners and feed manufacturers for deferred delivery. At harvest they sold oil and meal at firm prices that was not to be delivered for as much as 12 months. This forward trading is by private treaty rather than in formal futures markets. It illustrates the second point that risk shifting systems developed naturally and exist whether there are futures markets or not.

These forward contracts are typically made at prices lower than prices for immediate delivery. That is, soybean oil for delivery this month usually sells for more than the same oil for delivery next month; oil for delivery next month more than oil for delivery month after next, etc. In 1947-48 the average discount for oil was about one-half cent per pound per month and in 1948-49 about one quarter of a cent per pound per month. The average discount on meal forward sales was 80 cents per ton per month in 1947-48 and \$1.00 per ton per month in 1948-49. To hire soybean oil and soybean meal users to carry soybean risks for six months

cost 26 cents per bushel in 1947-48 and 22 cents per bushel in 1948-49. Studies indicate that Illinois farmers would have received 27.5 cents more in 1947-48 and 21 cents more in 1948-49 for soybeans than they did had these risk premiums not existed. This illustrates the third point that it is necessary to pay risk premiums to get risks assumed. It also shows that risk shifting by forward sale of oil and meal is expensive. The structure of prices in futures markets during the same two years indicates that risks could have been shifted very much cheaper by hedging.

Major functions of futures trading. Futures markets have two major functions: the pricing of commodities and the shifting of risks. Prices must be set so that supplies are rationed to just meet requirements through each crop year. The price that just clears the market is the only workable price. The futures markets must provide a system for hedging that will get risks shifted to those people who will carry them the cheapest so that farmers who must or wish to sell at harvest may do so without penalty.

Expectations and discounting. The satisfactory performance of the first of these two jobs involves the formation of expectations and the discounting of them into current prices. The level of grain prices in the future is uncertain. Yet all people who own or will need to own supplies must form expectations about them. They must decide whether to sell now or later or whether to buy now or later. Sellers must make estimates of the total supplies to be sold and the price at which this total can be sold. If the prevailing price is above the average price expected sellers step up the quantities offered and if it is below the average expected the quantities offered are decreased. Both of these actions tend to force the price toward the average expected. Buyers must make similar estimates and either buy more or less than immediate requirements as the price, in relation to the expected price, indicates. The process is one of discounting the total annual supply-demand conditions into current prices.

It is through this discounting system that the flow of grains onto the market is regulated. We have reservoirs of grain that we can draw on or add to as the market thinks the price is too high or too low. These stocks are held by farmers, country elevators, terminal merchandisers, and processors and manufacturers. The effective ownership — the risk bearing — is largely in the hands of farmers and speculators in futures markets. These two groups must regulate the flow of grain onto the market. When we take into consideration this discounting of expectations it becomes clear that price is more than a balancer of supply and demand, wholly dependent upon market supplies and the rate of consumption. Market supplies and the rate of consumption are also dependent upon prices. Market

prices regulate the rate of consumption. They in turn depend upon expectations about the level of prices in the future.

The stability of prices through each crop year depends upon the effectiveness of the discounting system. The discounting system must do two things: (1) it must forecast prices and (2) it must discount these forecasts into current prices. The rather large amount of fluctuation in grain prices seems to show that forecasting is not very accurate. The futures markets seem to do a good job of discounting expectations into current prices. That is, expectations are not accurate but the market does a good job of discounting the expectations that exist. The first requirement of a good discounting market is a group of people who are willing to speculate. There are many such people participating in futures markets. The grain trade will not take the risks necessary to do the discounting job. Because of the discounting done by speculators prices are more stable than they otherwise would be.

Risk shifting. The other major job of futures markets is to get risks carried cheaply. The principle of buying at the lowest price is to shop in a broad market. The more potential risk bearers there are in the market the cheaper the cost of risk bearing.

Almost everyone knows about the opportunities to speculate in grain. Brokerage firms maintain offices in most important population centers so that facilities are readily available. Trading units and margin requirements are small enough that people with limited capital can speculate. The market for risk is very broad. Futures markets in grains are liquid; hedges can be placed and removed instantaneously without affecting prices. Risk premiums are so small that not everyone agrees with me that they exist. The best direct comparison of futures trading with a comparable system is with soybean risking; futures trading does a much better job.

T. A. HIERONYMUS

Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. ⁹ Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. ¹⁰ Federal Reserve Bulletin of Federal Reserve Board. ¹¹ Preliminary estimate. ¹² Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹³ Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.



Director, Extension Service in
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NATURAL HISTORY SURVEY LINE

CHAMPAIGN

TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS¹⁻⁴

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production ¹⁰
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-39
1934.....	93	86	76	96	79	68	71	80	68	75
1935.....	99	104	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	306	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	247	275	207	383	392	189	303	351	192
1949.....	192	218	218	200	343	346	176	308	325	176
1949 Dec....	188	204	202	196	371	333	170	307	329	179
1950 Jan....	188	204	201	198	337	379	190	314	329	183
Feb.....	190	209	209	198	240	307	155	320	330	180
Mar.....	190	210	209	200	247	325	163	327	334	187
Apr.....	190	210	213	200	232	258	129	319	337	190
May.....	193	217	226	203	268	332	163	319	348	195
June.....	195	218	226	204	275	285	140	323	363	199
July.....	202	232	241	204	353	393	193	326	368	196
Aug.....	206	234	240	206	383	344	167	333	394	209
Sept.....	210	237	243	208	437	339	163	339	403	212
Oct.....	210	234	235	208	538	549	264	342	416	217
Nov.....	213	242	240	210	484	429	204	344	415	215
Dec.....	218	247	252	212	402	371	175	357	425	217
Jan.....	223	255	261	217	372	393	181	352	...	219

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			Mar. 1950	Current months, 1950-1951		
	1935-39	1949	1950		Jan. 1951	Feb. 1951	Mar. 1951
Corn, bu.....	\$.66	\$1.17	\$1.35	\$1.20	\$1.60	\$1.66	\$1.64
Oats, bu.....	.31	.64	.76	.71	.90	.94	.92
Wheat, bu.....	.86	1.95	2.02	2.05	2.21	2.32	2.23
Barley, bu.....	.62	1.07	1.20	1.11	1.39	1.42	1.42
Soybeans, bu.....	.90	2.19	2.49	2.29	3.00	3.15	3.15
Hogs, cwt.....	8.52	18.58	18.08	16.10	20.10	22.20	21.30
Beef cattle, cwt.....	7.88	21.19	24.54	21.70	27.80	30.00	30.50
Lambs, cwt.....	8.36	23.43	25.06	24.20	30.00	35.40	37.20
Milk cows, head.....	58.00	198.33	216.67	205.00	245.00	255.00	260.00
Veal calves, cwt.....	8.66	25.05	28.01	25.70	33.00	35.60	34.00
Sheep, cwt.....	3.58	8.70	10.52	10.80	15.70	19.10	19.90
Butterfat, lb.....	.27	.58	.58	.59	.67	.66	.65
Milk, cwt.....	1.68	3.42	3.46	3.48	4.20	4.25	4.25
Eggs, doz.....	.19	.40	.31	.28	.35	.37	.40
Chickens, lb.....	.15	.27	.23	.25	.25	.29	.30
Wool, lb.....	.25	.42	.50	.42	.73	.94	1.15
Apples, bu.....	1.08	2.38	2.24	2.05	2.30	2.30	2.00
Hay, ton ¹³	9.39	22.68	20.77	20.80	22.80	23.70	22.40

¹⁻¹³ For sources of data in tables see the preceding page.

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Articles in This Issue

	PAGE
Meat Price Controls Face Difficulties— E. J. WORKING.....	1157
How Valuable Are the Soils of Central Illinois? — W. N. THOMPSON and P. E. JOHNSTON.....	1161
How Good Are Soybean Grades? — V. I. WEST.....	1165

MEAT PRICE CONTROLS FACE DIFFICULTIES

Meat and livestock price controls face rough going in the months ahead. They will provide many headaches for the price controllers as well as for farmers, the meat industry and consumers. The plain fact is that price changes have very important functions to perform in guiding the production and distribution of livestock and meat, and there seems little prospect that direct controls designed to combat inflation will successfully perform those functions.

Basic changes in the weather, in feed supplies, in consumer demand, and in other factors require continual readjustments in the production of meat animals and in the production and consumption of meat. These changes are necessary if we are to use our agricultural resources efficiently. They are necessary to maintain the flow of meat to consumers without spoilage and waste as the supplies change.

Private enterprise operating under a price system provides the means by which the livestock and meat industry adjusts to these changing conditions. At one end of the marketing chain are millions of farmers who raise the livestock. At the other end are many more millions of consumers who eat the meat. In between are thousands of businesses — individuals and firms — engaged in marketing livestock, converting them into meat, and distributing the meat to consumers. Even in the meat packing business, where the bulk of the livestock slaughtering is carried on by a few large companies, there are over a thousand establishments. With so many independent producers, and with the production of feed-stuffs depending almost as much on the vagaries of the weather as upon the plans of the farmers, it is not possible to fix a price and then schedule

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

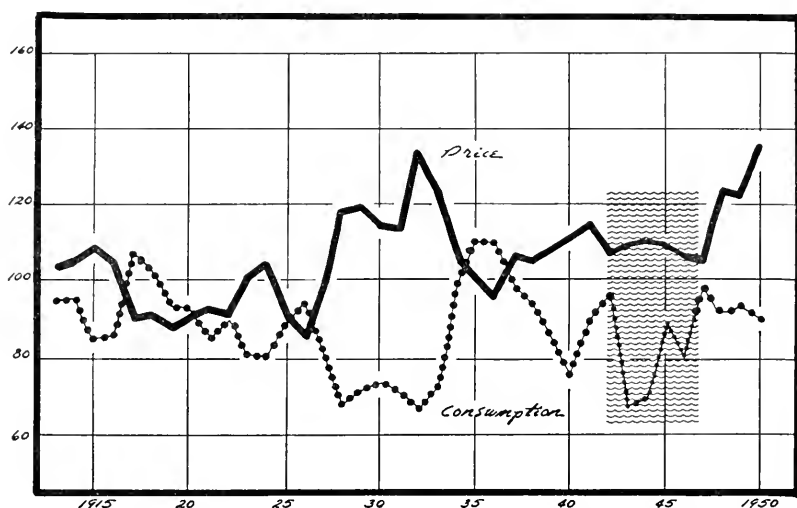


FIG. 1. — BEEF-PORK PRICES AND CONSUMPTION

(Percent which average retail price of beef is of pork, and percent which civilian consumption of beef is of pork)

production to the amount which can be sold at that price. Rather, farmers must plan their livestock programs on the basis of the amount of feed they have on hand or expect to be able to grow or buy, and upon the relationship — present and prospective — between livestock and feed prices. As the supplies of feed and the numbers of livestock change there are corresponding changes in the price relationships — changes, not only between months and years, but also between states and regions. Then, as the livestock come to market and are converted to meat, changing prices for the various sorts of meat direct consumption away from those meats which are in short supply and encourage the consumption of those whose supplies are plentiful.

Some indication of the extent of the changes may be had from the fact that in the past ten years the corn crop has ranged from 2.7 to 3.7 billion bushels, and at U. S. average prices, a hundred pounds of hog has been worth all the way from 8.8 to 17.2 bushels of corn. In the same period the annual commercial slaughter of cattle has ranged from 15.8 million to 21.5 million head, and that of hogs from 59.7 to 84.5 million.

The way in which prices adjust consumption to supplies is illustrated by Figure 1. It shows the relative prices and consumption of beef and pork from 1920 to 1950. The solid line shows the percentage which the average retail price of beef was of the average retail price of pork for

each year. The dotted line represents the percentage which beef consumption was of pork consumption. From 1942 to 1947 (the shaded area) wartime price control and rationing were in effect. During this period the officially reported prices did not reflect the "black market" prices, and there was a great shortage of beef at the ceiling prices in spite of meat rationing.

It is apparent that, except for the price control period, there is a close inverse relation between the price ratio and the consumption ratio. In almost every year when the price of beef rose relative to that of pork, there was a corresponding decline in the consumption of beef relative to the consumption of pork. Similarly a decline in the price of beef relative to pork results in a rise in the beef-pork consumption ratio.

The chart also shows that there has been a marked upward trend in the beef-pork price ratio. There has been a similar upward trend in the ratio of beef cattle prices to hog prices and in the ratio of all meat animal prices to prices of grains and hay. Ten-year averages of these price ratios are shown below.

	Percent beef cattle prices are of hog prices (U. S. average farm prices)	Percent meat animal index is of feed grains and hay index
1910 to 1919	71	78
1920 to 1929	77	87
1930 to 1939	92	94
1940 to 1949	94	111

These long-time changes in price relationships involve fundamental changes in the conditions and costs of production. The open range is largely a thing of the past. Many ranges were overstocked 30 years or so ago, and as a result they have deteriorated and will now carry fewer cattle than formerly. Detrimental weeds have invaded much range territory. The revolution in farm power has made available for meat animals and dairy cattle the feeds of a vast acreage formerly required for maintenance of horses and mules, and that, together with the development of hybrid corn, has done more to relieve the pressure of a growing population on our resources for meat production than the continuing erosion has done to increase that pressure. Whether there will be similar technological advances in the future remains to be seen, but it is certain that there will continue to be both year-to-year changes and trends in the

conditions of production and demand which will require continual readjustments in the use of our meat production resources.

The coordination of production and consumption of the livestock and meat industries is a mammoth task, but most people seldom give a thought to it. Active competition, operating in the framework of the price system, does the job "automatically" and highly satisfactorily so long as the remainder of the economy does not develop a spasm of under-production or an excessive supply of money. During the past decade and a half, the operation of the automatic system has been supplemented by corn loans and some other price support action, but only the price controls of the OPA period have seriously interfered with it.

The cattle and meat price controls may not get into serious difficulty in the next few months. This is likely partly because the minimum permissible ceiling prices on beef cattle (the May 24 to June 24, 1950, average prices) are well above parity, and most of the time may not be much, if any, below the prices which would result under free market conditions. Cattle numbers are at a fairly high level, but last year marketings were low relative to numbers because farmers and ranchers were increasing their herds. If, either because of shortage of feed or discouragement over price prospects, there should be a liquidation of herds, beef cattle marketings could readily be so large as to reduce prices to less than the ceiling levels.

Direct price controls, nevertheless, cannot be expected to do as good a job of coordinating our meat needs with the resources for meat production as has the free price system. Judging from our experience of World War II, the controls do not have sufficient flexibility to work satisfactorily even under conditions when appeals to patriotism are most effective. Retail meat price ceilings, if they really restrain prices, immediately result in shortages. Rationing is then necessary, and rationing really amounts to adding a second kind of money and a second price system to the one we already have. Rationing can be successful only if the amount of ration points and the "ration prices" are kept in balance with the available supplies of rationed goods. We might better start by keeping the supplies of our regular money in balance with the quantities of goods available.

Even if price controls could be made sufficiently flexible and could be administered with sufficient knowledge and freedom of action to make them as good guides of production and consumption as are freely competitive prices, they would still be subject to attack. Take the case of cattle feeders. They are accustomed to taking risks. When prices move against them they are accustomed, also, to taking losses. Losses due to misjudging the future course of prices are likely to be accepted without

much complaint and without resentment if the prices are the result of the impersonal price determination of a freely competitive market. But suppose the losses are believed to be the result of prices that have been "rigged"? That becomes another matter! The reaction to controlled prices is similar to the reaction to rigged prices. If cattle feeders lose money when prices are the result of decisions of administrators in Washington, the feeders may well blame, not their own judgment, but the acts of the officials or the system which is responsible for the unfavorable prices.

Finally, direct price controls do not really prevent inflation. Since they do not strike at the cause of inflation they can only delay, not finally prevent the rise of prices. Direct price controls make the money which people receive during the period of control seem to be worth more than it would without the controls, but while controls last the money cannot all be spent. When the time comes that the remainder can be spent, it is found to be worth less than it seemed to be when it was received. Then too, direct price controls will almost surely sooner or later result in a reduction of meat production. Hence, they will probably result in meat prices being higher than they would have been without the controls.

The so-called "indirect" price controls, on the other hand, *can* really prevent inflation. If through fiscal, monetary, and banking policies an undue expansion of the supply of money and credit is prevented, price inflation is snuffed out at its source. Then direct price controls can be limited to those commodities where price competition is not generally free and effective, or where the rearmament program has so greatly affected the physical needs as to disorganize the usual markets. Livestock and meats are not among those commodities.

E. J. WORKING

HOW VALUABLE ARE THE SOILS OF CENTRAL ILLINOIS?

The answer to this question is not a simple one. There is no answer which is correct for everyone. Different people have different ideas about the value of things. Our ideas about the value of things change. We express values in terms of dollars but the dollar changes in value. We have seen much of this during the past decade when dollars have become more plentiful but have also become cheap—they buy less—we have had inflation.

To get a better idea of the *relative* value of some of the soils of central Illinois, we have studied farms on which we know the soil types and on which we have records of production, income, and expenses. Records of these farms for the ten-year period 1935-1944 were studied. This was a period of five late depression years and five years of preparation for war

TABLE 1. — SIZE OF FARM, LAND USE, CORN YIELDS, AND VALUE OF FEED FED FOR SELECTED SOIL ASSOCIATIONS, CENTRAL ILLINOIS, 1935-1944

Soil associations and soil type productivity ratings (in parentheses) ^a	Number of farms	Acres per farm	Percent tillable	Percent tillable land in hay and pasture	Percent tillable land in corn and soybeans	Corn yield per acre	Value of feed per acre to productive livestock
Tama silt loam (3) and Muscatine silt loam (2).....	15	273	77	31	43	64	\$20
Tama silt loam (3), Muscatine silt loam (2), and Sable silt clay (1).....	17	278	91	27	43	66	22
Muscatine silt loam (2) and Sable silt clay (1).....	28	298	94	23	53	67	16
Muscatine X (2) and Sable X (1) ^b	11	294	95	22	47	65	16
Tovey silt loam (3-4), Bolivia silt loam (2-3), and Ipava silt loam (2), and							
Ipava silt clay (1).....	20	234	92	29	45	60	21
Saybrook silt loam (2-3), Lisbon silt loam (1-2), and Drummer clay loam (1)	24	272	93	26	45	67	22
Flanagan silt loam (2) and Drummer clay loam (1).....	18	284	95	20	57	61	8
Proctor silt loam (3-4), Brenton silt loam (2), and Drummer clay loam (1)	24	259	90	23	49	62	12
Elliott silt loam (4) and Ashkum clay loam to silt clay loam (2-3).....	10	230	90	21	51	59	15
Swygert silt loam to silt clay loam (4-5) and Bryce clay loam to clay (3-4)	11	303	94	27	44	55	10
Harrison silt loam (4-6), Herrick silt loam (4-5), and Herrick clay loam (3)	20	250	89	29	46	57	17
Clinton silt loam (5).....	5	285	65	38	34	53	13

^a The productivity rating is based on the ability of the soil type to produce the major crops grown in the area without soil treatment but with the soil in a cleared and drained condition. The scale used is 1 to 10, the most productive soils in the state being rated as 1 and the least productive as 10. Illinois Bulletin 522 shows the characteristics of these soils in greater detail.

^b Uncorrelated brown silt loam and black clay loam associated. No official name assigned.

TABLE 2. — AVERAGE EXPENSES, EARNINGS, AND CAPITALIZED VALUE OF LAND AND BUILDINGS FOR SELECTED SOIL ASSOCIATIONS, CENTRAL ILLINOIS, 1935-1944

Soil associations	Gross earnings per acre	Total expense per acre ^a	Net earnings per acre	Earnings per acre from real estate ^b	Index of earnings from real estate ^b	Capitalized value of land and buildings per acre ^c
Tama silt loam and Muscatine silt loam.....	\$36.39	\$16.98	\$19.41	\$17.35	74	\$347
Tama silt loam, Muscatine silt loam, and Sable silt clay.....	42.63	18.99	23.64	22.05	94	441
Muscatine silt loam and Sable silt clay.....	42.05	16.17	25.88	23.58	100	472
Muscatine X and Sable X.....	40.77	16.05	24.72	21.77	92	435
Tovey silt loam, Bolivia silt loam, and Ipava silt clay.....	40.13	17.35	22.78	22.13	94	443
Saybrook silt loam, Lisbon silt loam, and Drummer clay loam.....	42.88	17.81	25.07	22.28	94	446
Flanagan silt loam and Drummer clay loam.....	33.57	12.88	20.69	21.92	93	438
Proctor silt loam, Brenton silt loam, and Drummer clay loam.....	35.00	14.36	20.64	19.32	82	386
Elliott silt loam and Ashkum clay loam to silt clay loam.....	38.68	16.12	22.56	21.13	90	423
Swygert silt loam to silt clay loam and Bryce clay loam to clay.....	30.14	13.18	16.96	14.69	62	294
Harrison silt loam, Herrick silt loam, and Herrick clay loam.....	32.89	16.40	16.49	17.85	76	357
Clinton silt loam.....	28.67	15.69	12.98	12.93	55	259

^a Includes cash operating expenses, depreciation, and value of operator's and unpaid family labor at hired man's wage rates.

^b Net earnings per acre minus 5 percent of investment in livestock, feed, and machinery. These figures are also adjusted for differences in the level of soil management.

^c Earnings per acre from real estate capitalized.

and war. Yes, we recognize that we may never go through a ten-year period just like this. Too, we know that the value of land depends *not* on its *past* but on its *present and future* productivity and earning ability. But the past gives us a benchmark and the *relative value* of the different soils may be rather stable even though the absolute (dollar) value changes considerably.

The farms studied. Farms that had soils which fell into one of the 12 associations (combinations of soil types) shown in Table 1 were studied. All of the soils, except Clinton silt loam, developed under prairie vegetation and are dark in color. Clinton silt loam, with a productive rating of "5",¹ is a light-colored soil which developed under forest vegetation. The soils on these farms are relatively good soils but there are significant differences in the properties of the soils in the different associations. Except for the Tama-Muscatine and Clinton associations they are about 90 percent or more tillable.

The results of this study reflect not only the soil conditions but also the associated economic factors such as markets and transportation costs. Any differences in levels of management associated with the different soils also influence organization and earnings.²

The land use and corn yields. The income-producing ability of a soil is influenced by the percentage of the tillable land that can be planted to cultivated crops as well as by the proportion of the land that is tillable. Three of the associations had over 50 percent of the tillable land in corn and soybeans, the most profitable cash crops of the area. These were Muscatine-Sable, Flanagan-Drummer, and Elliott-Ashkum.

The soil associations which were high in the proportion of tillable land in corn and soybeans were low in the proportion in hay and pasture. The farms where Clinton silt loam predominated, with only 65 percent of the land tillable, had 38 percent of the tillable land in hay and pasture. Thus, out of each 100 acres on the Clinton farms 22 acres were in corn and soybeans; 18 in small grain; 25 acres in rotation hay and pasture; and 35 acres in nontillable pasture, woods, lots, and wasteland. In contrast, the Flanagan-Drummer farms had 54 out of each 100 acres in corn and soybeans. We shall presently see the effect upon earnings of the use to which the land is capable of being put.

We see two tendencies in the corn yield data (Table 1). One is the

¹ The productivity rating is based on the ability of the soil to produce the major crops grown in the area without soil treatment but with the soil in a cleared and drained condition. The scale used is 1 to 10, the most productive soils in the state being rated as 1 and the least productive as 10.

² Studies have shown that farms cooperating with the University of Illinois in keeping farm records tend to be larger, are located on better land, and have more intensive livestock organizations than the average of all farms.

general tendency for the yields to be highest on the better soils; however, there is a further indication that corn yields can be relatively high on less than the best soils providing too much of the land is not put to cultivated crops. For example, the Tama-Muscatine farms had a corn yield of 64 bushels while the Flanagan-Drummer farms (better soils) had a 61-bushel yield. However, the Flanagan-Drummer farms only had 20 percent of the tillable land in hay and pasture while the Tama-Muscatine had 31 percent.

Amount of livestock. The amount of livestock is indicated by the value of feed fed per acre to productive livestock (Table 1). The livestock were mainly beef cattle and hogs with small dairy enterprises to furnish dairy products for the farm family. The amounts and kinds of livestock are influenced by a variety of factors such as yields and total production of the different grain and roughage crops, the slope and drainage of the land, and economic factors associated with location. The rolling lands of west-central Illinois must be used to produce hay and pasture; therefore, the high grade and relatively level soils are used to produce feed grains to make balanced livestock enterprises. The east-central Illinois area is in a favorable position to produce corn, oats, and soybeans to be used as feeds on farms outside of the area or to be converted into manufactured products.

Earnings and expenses. The per-acre earnings and expenses from the farms on the different soils are shown in Table 2. The net earnings per acre, the important figure, ranged from \$12.98 on the Clinton farms to \$25.88 on the Muscatine-Sable farms.³ The earnings per acre from real estate (land and buildings) shows the amount left to pay for land and buildings after deducting 5 percent of the investment in operating capital (livestock, feed, and machinery). This figure was also adjusted for differences in the level of soil management on the different soils to make the earning figures more nearly comparable.

The "index of earnings from real estate" shows the data from the preceding column expressed as a percentage of the earnings on the Muscatine-Sable soil. This shows the relative value of the different soils. For example, if Muscatine-Sable soil with an index of 100 is worth \$400 per acre the Swygert-Bryce soil, with an index of 62, is worth 62 percent as much, or \$248.

Capitalized value of land and buildings. If the earnings for the period, 1935-1944, are capitalized at five percent we get the values as

³ "Net earnings" is the difference between "gross earnings" (cash income, inventory changes, and value of farm products used in home) and "total expense" (cash operating expenses, depreciation on capital items, and operator and family labor valued at rates paid hired men).

shown in the last column of Table 2. Whether these reflect current (1951) values is problematical. The period, 1935-1944, was a period of high earnings in comparison with earlier periods. Earnings were about one-third above those in the longer period, 1926-1945. They were far above the earnings of the 1930's. Yet the earnings of the post World War II years have been higher than these. It should also be pointed out that these figures include a return which is due to management and result, in part, from depleted soil elements.

To repeat, the current value of land depends on present and future productivity and earning ability. What future earning ability will be depends on many things, some over which the individual farmer has little control. The trend of inflation or deflation is an example. However, the figures of *relative* earning ability of the different soils should be a guide to more accurate appraisal and help the buyer to wisely invest the capital which he has available for land purchase.

W. N. THOMPSON and P. E. JOHNSTON

HOW GOOD ARE SOYBEAN GRADES?

Everything we buy is described in three ways:

1. What it is.
2. How much of it.
3. What quality it is.

Let us distinguish between two cases in the way quality is now handled. (1) The quality description may be ignored if the quality is understood or if it is unimportant. For example, in buying 41 percent soybean meal there is rarely any further quality specification. (2) Or, as in buying soybeans, corn, or other grains from farmers there are usually detailed quality specifications in the form of (a) grades—which specify limits to quality factors and (b) discount schedules—which specify discounts to be made in prices for deviations in quality from the basic grade.

What differences make possible the use of either method?

In the first case the processor has an opportunity to blend various lots of raw material so that his product can always be above a minimum standard. In the second case each individual lot may have properties which make it more or less valuable than other lots of the same commodity. So the price should be varied for the quality of each lot.

If grades are based on factors which affect the use value of the various lots, then they may properly be used as the quality specifications.

The reason for having grades is to add something to our knowledge of the relative value of the things we buy. Ideally each lot of grain should

fall into one particular grade, and every lot of No. 2 grain should be worth more than any lot of No. 3 grain and less than any lot of No. 1 grain of the same kind.

If this were true and various buyers needed grain of a particular quality, then grades would permit buyers to buy grain of that quality without examining the grain itself. This possibility is one of the chief justifications for grades. It permits sales by description. But often grades do not do this accurately enough and so an alternative is used: sales according to a price schedule. Either type of sale requires careful inspection at each marketing point.

For soybeans it is not true that every lot of No. 3 soybeans is worth less than any lot of No. 2 soybeans.

The trade recognizes this fact by refusing to buy soybeans on grade. Instead they buy on grade factor discounts. Grades of soybeans simply do not add enough to our knowledge of the value of various lots of soybeans to be used. They do not divide soybeans into value classes.

What are soybean grades? Soybean grades specify:

Grade	Minimum test weight per bushel	Maximum limits of			
		Moisture	Splits	Damage	Foreign material
	pounds	percent			
1.....	56	13	10	2	2
2.....	54	14	20	3	3
3.....	52	16	30	5	4
4.....	49	18	40	8	6

Test weight is meaningless in soybeans. This measure was developed and tested for wheat and adopted for soybeans as a general indicator of quality. Test weight does indicate variations in foreign material and moisture but these factors are measured directly. High test weight indicates low oil content when foreign material and moisture are constant, but so roughly as not to be a useful value indicator.

Moisture. Moisture is the most important index of commercial value of soybeans in most seasons. It affects value in two ways: (1) it determines the amount of dry matter and (2) when it is above 12 or 13 percent, it prevents or limits safe storage of the soybeans.

Splits. Another nearly meaningless grading factor is splits.

The arguments for using splits as an indication of soybean quality are:

(1) They are useless as seed; (2) They tend to become rancid in storage, to furnish media of fungus growth, and to yield lower quality oil; (3) They need not be present in carefully handled soybeans.

The facts are: (1) commercial soybeans are not intended for seed; (2) the quality of the oil from splits is slightly lower but the amount of oil is greater. So splitting cannot be regarded as a serious defect in soybeans for domestic processing.

Damage. A variety of conditions come under this heading and little is known about them. Some of them do not affect oil yield or quality. Others affect both yields and qualities. In most years damage is not a serious problem. There is need for better measure of damage, and more accurate knowledge of the effect on commercial value of different kinds of damage.

Foreign material. Foreign material is an important factor in determining the value of soybeans. Much of it is worthless, nearly all is of less value than soybeans. Soybeans containing much foreign material should be severely discounted. Since most foreign material may be removed in threshing, it is important that grading and pricing be designed to encourage farmers to clean up their soybeans and to encourage others to keep them clean.

Since soybean buyers have rejected grades as a basis for describing the quality of soybeans let us take a look at the *practices which are used*.

The soybean buyer does not specify the quality of the soybeans which may be delivered but specifies the price he will pay for any quality. He does this by basing his bids on a fixed discount schedule. There are two interesting peculiarities about the discount schedule now in use. First, it applies only to soybeans below No. 2 grade in any factor and, second, it is highly inflexible. Neither of these characteristics is essential. The Grain Standards Act requires that grain sold by grade be by U. S. official grade, but not that the price be based upon official grades. Discount schedules could readily be changed when price levels change. Such changes are essential if quality is to be valued properly.

The current discounts for the various factors are:

Test weight	one-half cent per pound	below 54 pounds
Moisture	one and one-half cents per one-half percent	above 14 percent
Splits	one-fourth cent per five percent	above 20 percent
Damage green	one-half cent per percent to 25 percent	above three percent
	one cent per percent	from 26 to 60 percent
	one and one-half percent	over 60 percent
Foreign material	deduct from gross weight	above three percent

Certain observations may be made about these discounts:

1. Test weights below 54 pounds are rare and are usually associated with high foreign material content.
2. Splits above 20 percent are almost unknown in country-run soybeans so that this discount affects few soybeans (maybe one-half of one percent). Buyers usually ignore the discounts for splits if it is less than one-half cent (not more than 30 percent splits).
3. In most years very few soybeans are damaged.

So moisture and foreign material are the two effective discount factors.

Not more than 20 to 25 percent of the soybeans are normally subject to discounts. These are usually divided pretty well between moisture and foreign material, with a few discounts for splits and damage.

How well do current discounts for moisture and foreign material account for variations in value?

If the foreign material is worthless the variations in value are all accounted for above three percent except costs of transportation and cleaning. If the recoverable value of foreign material will pay these costs then deducting foreign material from gross weight is an adequate penalty. Variations below three percent are now ignored.

Moisture discounts are expressed as cents per bushel. For the moment we will disregard the effect of moisture on storage and ask how well do the discounts account for variations in the amount of dry matter in a bushel of soybeans.

If the objective is to have a pound of dry matter cost the same in soybeans of any moisture content as it does in soybeans with 12 percent moisture, the rate of discounts should vary with the price of soybeans.

<i>Price</i>	<i>Rate of discounts</i>
\$2.00	2.3 cents per percent
2.50	2.8 cents per percent
2.64	3.0 cents per percent
3.00	3.4 cents per percent
3.50	3.9 cents per percent
3.52	4.0 cents per percent
4.00	4.5 cents per percent
4.50	5.1 cents per percent

The discount was three cents per percent of moisture in 1941 when the season's average price for soybeans was \$1.55 and also in 1947 when the season's average price was \$3.34. In the first year moisture was overdiscounted; in the second it was underdiscounted.

There are several ways in which this treatment of moisture and foreign material could be improved. Two of these will be discussed here.

1. Define a bushel of soybeans as containing 60 pounds of soybeans of 12 percent moisture and three percent foreign material and calculate

net bushels in such a way as to compensate for deviations from this standard. Let us consider two examples and calculate the prices according to the various pricing mechanisms. One point which should be made here is that the fact that we have used the same basic price under each of the various pricing mechanisms should not be considered as implying that commercial bids for soybeans would not be changed by adopting this definition of a bushel.

Example 1. Sixteen percent moisture, four percent foreign material, 90,000-pound carload, \$3.00 No. 2 yellow.

Present practice. Present practices would discount this carload of soybeans one percent in weight for excess foreign material and six cents in price for excess moisture. One percent of 90,000 is 900 pounds.

$$\frac{90,000 - 900}{60} = 1,485 \text{ net bushels}$$

$$1,485 \times \$2.94 = \$4,365.90 \text{ total value}$$

New definition. If net bushels were calculated according to the above suggestion the weight discount would be approximately one percent for excess foreign material plus four percent for excess moisture or a total of five percent. Five percent of 90,000 is 4,500 pounds.

$$\frac{90,000 - 4,500}{60} = 1,425 \text{ net bushels}$$

$$1,425 \times \$3.00 = \$4,275 \text{ total value}$$

More exactly the weight discount should be such that each net bushel would have as much soybean dry matter as a bushel with 12 percent moisture and three percent foreign material. That is, $60 (1 - .03) (1 - .12) = (60) (.97) (.88) = 51.216$ pounds of soybean dry matter. This can be determined by calculating the pounds of soybean dry matter in the carload and dividing by 51.216

$$\frac{90,000 (1 - .04) (1 - .16)}{51.216} = 1,417.057 \text{ net bushels}$$

$$1,417.057 \times \$3.00 = \$4,251.17 \text{ total value}$$

The difference $(\$4,365.90 - \$4,251.17 = \$114.73)$ is the amount by which the present pricing practices failed to discount this lot of soybeans at the \$3.00 price level.

Example 2. Ten percent moisture, two percent foreign material, 90,000-pound carload, \$3.00 No. 2 yellow.

Present practice. Since this carload is above No. 2 in both foreign material and moisture net bushels are $\frac{90,000}{60} = 1,500$ and there is no price discount

$$1,500 \times \$3.00 = \$4,500 \text{ total value}$$

New definition. Calculating the pounds of soybean dry matter and dividing by 51.216 gives the net bushels.

$$\frac{90,000 (1 - .02) (1 - .10)}{51.216} = 1,549.9 \text{ net bushels}$$

$$1,549.9 \times \$3.00 = \$4,649.70 \text{ total value}$$

Or by the approximate method a two-percent premium for dry matter plus a one-percent premium for foreign materials gives a total three-percent premium. Three percent of 90,000 pounds is 2,700 pounds.

$$\frac{90,000 - 2,700}{60} = 1,545 \text{ net bushels}$$

$$1,545 \times \$3.00 = \$4,635 \text{ total value}$$

2. Another system might be: full scale weight discounts and premiums for foreign material with accurate full scale price discounts and premiums.

Example 1. 1,485 net bushels (see above). It can be seen from the table above that at the \$3.00 price level the price discounts should be at the rate of 3.4 cents per percent.

$$\$3.00 - 4 (\$.034) = \$2.864$$

$$1,485 \times \$2.864 = \$4,253.04 \text{ total value}$$

Example 2. Extending the foreign material scale to include premiums for relatively clean soybeans this carload should get a one percent weight premium. Ninety thousand pounds of two percent soybeans contains 1,800 pounds of foreign material and 88,200 pounds of soybeans. Actually the net bushels should be the number of bushels of soybeans with three percent foreign material which contains 88,200 pounds of soybeans. This would be:

$$\frac{88,200}{(.97) 60} = \frac{90,927.8}{60} = 1,515.5 \text{ net bushels}$$

For simplicity however, we may merely add one percent to the gross weight.

$$\frac{90,900}{60} = 1,515 \text{ net bushels}$$

The two-percent deficit in moisture below the present 14 percent standard in moisture may be allowed for by premiums at the 3.4 cents per percent rate.

$$1,515 \times \$3.068 = \$4,648.02 \text{ total value}$$

We may summarize these two examples in a table:

	Value with different pricing practices			
	Present practice	Accurate full-scale discounts and premiums ^a	Net bushels as defined ^b	
			Approximate	Exact
Example 2.....	\$4,500.00	\$4,648.02	\$4,635	\$4,649.70
Example 1.....	4,365.90	4,253.04	4,275	4,251.17
Difference.....	\$ 134.10	\$ 394.98	\$ 360	\$ 398.53

^a Foreign material discount or premium figured at one percent of the gross weight for each one percent of foreign material above or below three percent, and moisture discount or premium 3.4 cents for each one percent of moisture above or below 12 percent.

^b Containing 51.216 pounds of soybean dry matter.

How could such quality differentiation be introduced? Somebody has to be willing to pay for what they get, no more and no less. They can do this only by paying for each lot according to its true commercial value.

V. I. WEST

Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. ⁹ Federal Reserve Bulletin of Federal Reserve Board. ¹⁰ Preliminary estimate. ¹¹ Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural statistician. ¹² Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.



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TABLE A.—INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Index of production
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-39
1934.....	93	86	76	96	79	68	71	80	68	71
1935.....	99	104	102	99	89	80	91	86	79	81
1936.....	100	107	105	99	105	106	107	101	91	101
1937.....	107	113	118	105	111	111	105	107	109	111
1938.....	98	91	90	99	96	101	102	100	85	88
1939.....	96	86	84	98	99	102	104	107	100	100
1940.....	97	89	89	99	105	114	115	115	114	121
1941.....	108	108	112	105	140	147	140	138	165	167
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	306	185	255	272	171
1947.....	189	238	265	192	377	391	204	279	327	181
1948.....	205	247	275	207	383	392	189	303	351	191
1949.....	192	218	218	200	343	346	176	308	325	171
1950 Jan....	188	204	201	198	337	379	190	314	329	181
Feb.....	190	209	209	198	240	307	155	320	330	181
Mar.....	190	210	209	200	247	325	163	327	334	181
Apr.....	190	210	213	200	232	258	129	319	337	191
May.....	193	217	226	203	268	332	163	319	348	191
June.....	195	218	226	204	275	285	140	323	363	191
July.....	202	232	241	204	353	393	193	326	368	191
Aug.....	206	234	240	206	383	344	167	333	394	201
Sept.....	210	237	243	208	437	339	163	339	403	211
Oct.....	210	234	235	208	538	549	264	342	416	211
Nov.....	213	242	240	210	484	429	204	344	415	211
Dec.....	218	247	252	212	402	371	175	357	426	211
1951 Jan....	223	255	261	217	372	393	181	355	423	221
Feb.....	228	267	277	220	276	307	140	357	...	221

TABLE B.—PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			April 1950	Current months, 1951		
	1935-39	1949	1950		Feb.	Mar.	Apr.
Corn, bu.....	\$.66	\$1.17	\$1.35	\$1.27	\$1.66	\$1.64	\$1.66
Oats, bu.....	.31	.64	.76	.75	.94	.92	.9
Wheat, bu.....	.86	1.95	2.02	2.11	2.32	2.23	2.2
Barley, bu.....	.62	1.07	1.20	1.11	1.42	1.42	1.4
Soybeans, bu.....	.90	2.19	2.49	2.52	3.15	3.15	3.1
Hogs, cwt.....	8.52	18.58	18.08	15.60	22.20	21.30	20.6
Beef cattle, cwt.....	7.88	21.19	24.54	22.50	30.00	30.50	31.6
Lambs, cwt.....	8.36	23.43	25.06	24.50	35.40	37.20	36.4
Milk cows, head.....	58.00	198.33	216.67	210.00	255.00	260.00	265.0
Veal calves, cwt.....	8.66	25.05	28.01	25.70	35.60	34.00	34.2
Sheep, cwt.....	3.58	8.70	10.52	11.00	19.10	19.90	19.9
Butterfat, lb.....	.27	.58	.58	.59	.66	.65	.6
Milk, cwt.....	1.68	3.42	3.46	3.35	4.25	4.25	4.1
Eggs, doz.....	.19	.40	.31	.27	.37	.40	.4
Chickens, lb.....	.15	.27	.23	.26	.29	.30	.3
Wool, lb.....	.25	.42	.50	.43	.94	1.15	.9
Apples, bu.....	1.08	2.38	2.24	2.15	2.30	2.00	2.0
Hay, ton ¹³	9.39	22.68	20.77	21.20	23.70	22.40	22.0

^{1 13} For sources of data in tables see the preceding page.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the U. S. States Department of Agriculture cooperating. H. P. Rusk, Director. Acts approved by Congress May 8 and June 30,

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Articles in This Issue

	PAGE
Marketing Illinois Veal Calves — W. J. WILLS and R. W. GRAHAM...	1173
Illinois Swine Producers Interest in Out-of-State Packers — W. J. WILLS.....	1176
Tenure Pattern in the Claypan Region of Southern Illinois — A. J. CROSS and J. E. WILLS.....	1177

MARKETING ILLINOIS VEAL CALVES

On January 1, 1951, Illinois farmers had 972 thousand dairy cows. This should mean over 900 thousand dairy calves will be born during the year. With veal prices mostly above \$30 per hundred farm income from the sale of offspring from dairy cows should exceed 17 million dollars in 1951.

The dairyman is faced with a problem as to how to best dispose of dairy cattle. There are three alternatives:

1. Sell the calf at three days to a week of age.
2. Raise the calf primarily on milk and milk substitutes to sell as a veal.
3. Feed the calf a minimum of milk and produce an animal that can be sold as a calf, kept or sold as a replacement, or fed out to fall in the classification of butcher or slaughter cattle.

From a marketing standpoint selling very young calves involves many problems. They are too immature to be sold for slaughter. Most frequently they are sold to a local buyer on a per-head basis. A study of 97 farmers in the St. Louis milkshed indicated about one-third of the calves sold were in this group.

There are more available market outlets for veal and dairy bred slaughter cattle. Marketing costs per hundred are usually less for cattle than for veal calves. But a high-grade choice or prime veal will frequently develop into a two-year-old slaughter animal that will grade no higher than commercial.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

Three major factors should be considered in determining what to do with dairy calves.

1. Weight at birth.
2. Price of milk.
3. Expected price of calf.

Weight at birth. Most authorities estimate it takes approximately 10 pounds of milk to produce one pound of veal. Therefore, the heavier calves can be fed to produce the more desirable weight veals at a much lower cost than the lighter calves. For example, a 40-pound calf at birth would require 1,600 pounds of milk to produce a 200-pound veal while a 100-pound calf would require 1,000 pounds of milk. With milk at \$4.50 per hundred the cost of milk for the light calf is \$72, for the heavy calf \$45.

Frequently it is impractical to try to feed calves under 50 pounds at birth to sell as veals unless the price for milk or cream is very unfavorable. Such very small calves can often be carried on a ration with a minimum of milk and by the efficient use of succulent pasture and hay raised at a minimum cost to sell as a commercial grade slaughter animal.

A study of weight and grade of calves sold at National Stock Yards, Illinois 1950 by southern Illinois farmers showed that over three-fourths of the calves weighing less than 160 pounds graded medium and common. Over two-thirds of the calves weighing 160-199 pounds graded good and choice, and seven-eighths of the calves weighing 200-239 pounds graded good and choice. This further emphasizes that the heavier calves at birth have a better possibility of economically making the higher priced veals.

Price of milk. In producing the higher quality veal calves the principal feed item is milk. Frequently as an economy measure, calves are fed limited milk, some ground feed, and permitted to run on pasture. This gives an animal that is sunburned; the hair does not have the desired appearance so the live animal is discriminated against at the market. The reason for this discrimination is quite evident in the carcass. High-quality

TABLE 1. — ESTIMATED COST OF MILK TO PRODUCE A 180-POUND VEAL CALF WITH VARYING WEIGHTS OF CALF AT BIRTH AND WITH VARYING PRICES OF MILK

Weight at birth	Cost of milk at	Value above milk cost with veal at:		Cost of milk	Value above milk cost with veal at:	
	\$4.50	\$38	\$30	\$3.00	\$38	\$30
(pounds)	(cwt)	(cwt)	(cwt)	(cwt)	(cwt)	(cwt)
40.....	\$63.00	\$ 5.40	\$ -9.00	\$42.00	\$26.40	\$12.00
65.....	51.75	16.65	2.25	34.50	33.90	19.50
90.....	40.50	27.90	13.50	27.00	41.40	27.00

veal is a delicate meat. The method of handling described above destroys the delicate veal flavor, and the animal is too immature to produce quality beef, so there is a reason for wanting sleek, glossy coated veal calves.

Many farmers selling Grade A milk may not feel justified in keeping veal calves, while farmers selling condensery or cheese milk, or sour cream may find that feeding milk to veal provides a more profitable outlet for their milk than the usual market.

Expected price of calf. Usually there is a seasonal movement of veal calf prices (Figure 1).

Veal calves normally bring the highest prices in the winter and the lowest prices in the spring and summer. If a farmer breeds his cows to take advantage of the seasonal movement of milk prices and maximum production his calves will be ready for sale on the seasonally high markets; whereas, if he breeds to freshen in the spring the calves will sell on a seasonally low market.

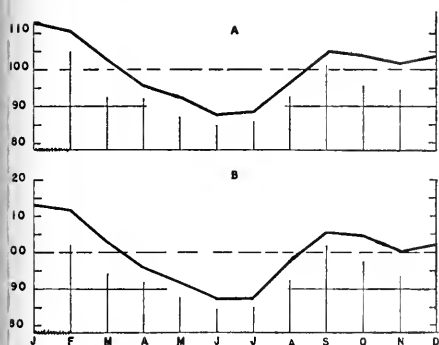


FIG. 1. — SEASONAL MOVEMENT OF PRICES OF VEAL CALVES, NATIONAL STOCK YARDS, 1931-42 AND 1947-49

A. Good and choice veal calves.

B. Medium veal calves.

Suggestions for marketing.

In the dairy areas a demonstration of the various market weights and grades would help the producers visualize how

their calves should sell and provide a basis for some changes in production practices.

Placing a calf on the truck to haul to market immediately after a heavy milk feed is discouraged. Under such conditions the calf will frequently become sick and upon arrival at the market will be listless, often times selling at a lower price than it otherwise would.

Calves should be partitioned in the truck to separate them from other species. This will provide protection and reduce in-transit losses resulting in deads, cripples, and bruises.

Conclusions. Dairy farmers have various outlets for their calves. Weight of calf at birth, price of milk, and expected future price of veal calves are all important in determining what should be done with the calves.

Unless the price of milk is very unfavorable a 40-pound calf can seldom be raised as a profitable veal.

If calves are to be handled to sell as veal they should be raised primarily on milk and given adequate protection from sun and wind to produce the "coat" and body characteristics associated with high quality.

W. J. WILLS and R. W. GRAHAM

ILLINOIS SWINE PRODUCERS INTEREST IN OUT-OF-STATE PACKERS

Approximately one-sixth of Illinois hogs are shipped alive from the state. If this out-of-state market for live hogs is to continue as an important outlet, then more information is needed about where, when, and why live hogs are shipped.

Why are live hogs shipped? These reasons given for shipping live hogs instead of meat from the areas of production are not necessarily listed in the order of their importance.

Some packers have slaughter plants near the consuming areas. In some cases, these plants are old plants that will not be replaced when worn out. But as long as the plant is available slaughtering will continue. In many other cases, these plants are a going concern and frequently they can charge more for locally dressed meat than would be possible for meat dressed in, say, Chicago if consumed near [and shipped to] New York.

It is cheaper to ship live hogs from some producing areas than to ship the dressed meat products because of the nature of the freight rate structure.

Another factor that should not be overlooked is that hogs are produced and marketed seasonally. This seasonal pattern varies from area to area. Many Illinois hogs go to Indiana for slaughter when the Indiana marketings are decreasing while Illinois marketings are increasing. When the Ohio and Indiana heavy runs are over (about the time the Illinois heavy runs start) many eastern packers come farther west to Illinois for their supplies.

In addition, most people in discussing hogs, have assumed all packers can use any type and weight of hog. It is known that as the marketing season advances the weight of hogs increases. Packers with specialty outlets need certain weight hogs to meet their customers' wants. So Illinois hogs of certain weights are shipped to other areas to supplement local or other outside supplies. For example, in August and early September with the Illinois spring pig crop starting to market at light weights while in the western corn belt the fall crop at heavier weights is still moving to market, live hogs are frequently shipped to Iowa, Nebraska, and Minnesota.

Where are live hogs shipped? Comparing hog marketings with hog slaughterings the largest deficit area is in the New England and Middle Atlantic states. In the corn belt states deficits are in Michigan, Minnesota, and Kansas. In the south deficits are in Virginia, West Virginia, Georgia, Tennessee, and Texas. In the mountain and western states small deficits are in Arizona, Utah, Nevada, and Oregon. Large deficits are in Colorado, Washington, and California.

The above 15 states are the ones that would seem to hold the most future in looking for additional markets. Because of various factors Minnesota, Kansas, and Colorado can probably be best served by hogs from the western corn belt.

In addition, because of seasonal variations in marketing weights and patterns, many Illinois hogs will continue to move to Wisconsin and Indiana.

What type hogs do these packers want? There are many exceptions to the type and weight of hog wanted by these distant packers. But generally packers in the New England states prefer hogs in the 240-260 pound bracket. In New York they want hogs under 200 pounds. On the west coast they seem to prefer 220-240 pound hogs.

If Illinois farmers are to keep these markets for live hogs outside the state they need to know what outlets their particular markets have for hogs. These outlets vary seasonally. The producer should check with his particular market to determine what the pattern is so that he can make such adjustments in his production and marketing pattern as will permit him to advantageously use these outlets.

W. J. WILLS

TENURE PATTERN IN THE CLAYPAN REGION OF SOUTHERN ILLINOIS¹

(Based on a study of 198 farms in Wayne County)

To provide a background of information for operators who wish to make adjustments in their farming programs, individuals engaged in advising claypan farmers, and others interested in the claypan region, a survey was made of 198 Wayne County farms of 30 acres and larger which were selected by an enumerative sampling procedure. Observations of the enumerator and data on tenure indicated that the claypan tenure pattern was rather unique and posed several important problems for farm

¹ This article was taken from a more inclusive study of the claypan region, conducted cooperatively by the Bureau of Agricultural Economics, United States Department of Agriculture, and the Department of Agricultural Economics, University of Illinois.

operators. The primary purpose of this article is to analyze the tenure pattern on the 198 farms surveyed.

Soil characteristics. Claypan soils cover practically all of the area in 20 counties,¹ roughly half the area in seven counties,² and a small part of the area in 14 other counties,³ in the southern half of Illinois. These soils are acid, are lacking in abundant natural fertility, and are underlain by an almost impermeable subsoil, known as claypan or hardpan, that prevents natural underdrainage during rainy periods and keeps moisture beneath the subsoil from reaching the roots of plants when the weather is dry. As a result, yields are extremely low when soils are not properly treated and managed and even though there is good management crops suffer noticeably from a deficiency of moisture after 10 or 15 rainless days elapse. In the absence of open-drainage ditches, water stands on the level or nearly level land for several days after a heavy rainfall and if applicable soil conservation practices are not used where there is considerable slope, water runs off rapidly and often causes serious erosion.

Characteristics of farms. In general, claypan farms comprise fewer acres, have lower capital investments, and return lower incomes than operating units in central and northern Illinois where soils are more productive.

Significant trends. During the last 50 years, the number of farms has decreased and acres per farm have increased slightly throughout the claypan region. Since 1930 the number of farms with tractors has increased significantly and acres of soybeans per farm have increased considerably.

Farming pattern of active operators. Although a few active Wayne County operators carry on intensive farming programs on one tract of land and a few others have one tract sufficiently large to accommodate an extensive farming program, the great majority of them carry on an extensive farming program on two or more tracts that are not contiguous, or if contiguous are owned by different individuals. One tract on which the farm headquarters is located, is usually owned by the operator. This tract generally has a higher percentage of its area in grasses and legumes than any of the others, and usually accounts for the greater proportion of the hay and pasture produced on the farm. To increase the size of their busi-

¹Counties in this group are Bond, Clark, Clay, Crawford, Clinton, Cumberland, Edwards, Effingham, Fayette, Franklin, Hamilton, Jasper, Jefferson, Marion, Perry, Richland, Saline, Washington, Wayne, and Williamson.

²Counties in this group are Gallatin, Jackson, Lawrence, Montgomery, Randolph, Shelby, and White.

³Counties in this group are Alexander, Christian, Coles, Edgar, Johnson, Maconpin, Madison, Massac, Monroe, Pope, Pulaski, St. Clair, Union, and Wabash.

nesses, most active operators rent, or occasionally buy, additional tracts, the majority of which are used for production of corn and soybeans. Tracts are usually rented from retired or semi-retired operators, absentee landowners, or part-time farmers (Table 1).

Change in activity of operators. Many farmers who have passed the most active part of their careers enter a transition period of from 10 to 20 years or more in which they gradually decrease the size of their farm businesses until they are semi-retired or retired and are still living on the headquarters tract of land.

At first a farmer may rent fewer additional tracts; later he may stop renting additional tracts and farm only the land he owns. Still later he may rent out most of the tillable land that is best adapted to corn and soybeans to younger farmers on a share basis, selling practically all the soybeans, and selling part and feeding part of the corn and small grain received as rent.

As the transition period goes on, livestock numbers are reduced. But even after they have greatly reduced the acreage of corn, small grains, and soybeans, or have stopped growing them altogether, a number of farmers keep enough livestock to consume a good proportion of the grain they

TABLE 1. — USE OF TILLABLE LAND PER FARM, ON HEADQUARTERS TRACTS AND TRACTS OTHER THAN HEADQUARTERS, BY TENURE, WAYNE COUNTY, ILLINOIS, 1948^a

	Owned farms		Rented farms		Part-owned farms		All farms	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Number of farms.....	58		34		106		198	
	Headquarters tracts							
Corn.....	21.1	21.1	35.1	28.8	11.8	18.5	18.6	21.9
Soybeans.....	8.2	8.2	19.4	15.9	9.5	14.9	10.9	12.9
Total.....	29.3	29.3	54.5	44.7	21.3	33.4	29.5	34.8
Small grain.....	5.3	5.3	13.3	10.9	7.1	11.0	7.6	9.0
Grasses and/or legumes..	60.8	60.7	46.9	38.4	33.6	52.6	43.8	51.8
Idle.....	4.6	4.6	7.3	6.0	1.7	2.7	3.5	4.2
Miscellaneous ^b.....	.1	.1	....	....	.2	.3	.1	.2
Total.....	100.1	100.0	122.0	100.0	63.9	100.0	84.5	100.0
Percent of land tillable...	86.0		77.4		81.8		82.0	
	Other tracts							
Corn.....	6.2	25.5	25.6	38.7	47.6	39.0	31.7	37.8
Soybeans.....	2.4	9.9	19.6	29.6	29.1	23.8	19.6	23.4
Total.....	8.6	35.4	45.2	68.3	76.7	62.8	51.3	61.2
Small grain.....	.7	2.9	13.3	20.1	14.3	11.7	10.1	12.0
Grasses and/or legumes..	11.6	47.7	5.1	7.7	27.4	22.4	19.0	22.7
Idle.....	3.2	13.2	2.5	3.8	3.6	2.9	3.3	3.9
Miscellaneous ^b.....	.2	.8	.1	.1	.2	.2	.2	.2
Total.....	24.3	100.0	66.2	100.0	122.2	100.0	83.9	100.0
Percent of land tillable...	71.9		77.5		84.7		82.4	
Total tillable land...	124.4	....	188.2	....	186.1	....	168.4	....

^a Farm survey. All farms include 30 or more acres.

^b Includes buckwheat, cane, milo maize, orchards, popcorn, and sunflowers.

receive as rent. A few carry almost as many livestock when they are along in years as they did when they were most active. On these farms most of the reduction in farm income is because there is considerably less grain to sell or because part of the livestock feed that was previously produced on the farm must be bought.

In the semi-retired or retired years livestock numbers are further reduced. The operator may milk one or two cows, take care of a small flock of chickens, grow a garden, or concern himself with some other enterprise that requires only a limited amount of effort.

Tenure status. As previously stated, in the units farmed by most active operators, a part of the land is owned and part is rented. Of the 198 farms surveyed, 106 were in this group and accounted for about 58 percent of all the land farmed, about 56 percent of all the land owned, and approximately 60 percent of all the land rented. Although only 34 of the remaining 92 farms had all rented land while 58 had all owned land, these two groups accounted for approximately the same percentage of the total acreages sampled. This is because practically all of the operators of rented farms were active and therefore farmed relatively large units, while a large number of the operators of owned farms were approaching, or were in, a semi-retired status and had reduced considerably the acreage they operated (Table 2).

Size of farm. The average farm comprised about 205 acres. Owned farms with 150.1 acres were considerably smaller than average while part-owned farms and rented farms with 222.4 and 243.2 acres respectively were somewhat larger than average (Table 3).

Owned farms are probably smaller than those in the other two groups because a large number of owner operators are past middle age and semi-retired. They rent no additional tracts; they carry on a reduced farming

TABLE 2.—ACRES AND PERCENTAGE OF OWNED AND RENTED LAND IN THREE TENURE GROUPS, WAYNE COUNTY, ILLINOIS, 1948*

	Tenure status			
	Owned	Rented	Part owned	All farms
Number of farms.....	58	34	106	198
Owned land				
Acres.....	8,706		11,232	19,938
Percent.....	43.7		56.3	100.0
Rented land				
Acres.....		8,269	12,340	20,609
Percent.....		40.1	59.9	100.0
All Land				
Acres.....	8,706	8,269	23,572	40,547
Percent.....	21.5	20.4	58.1	100.0

* Farm survey. All farms include 30 or more acres.

TABLE 3. — DISTRIBUTION OF FARMS BY ACREAGE AND TENURE,
WAYNE COUNTY, ILLINOIS, 1948^a

Acres	Owned farms		Rented farms		Part-owned farms		All farms	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
30- 99.....	24	41.4	..	....	12	11.4	36	18.2
100-179.....	21	36.2	10	29.4	35	33.0	66	33.3
180-259.....	5	8.7	9	26.5	29	27.4	43	21.7
260-339.....	2	3.4	10	29.4	14	13.2	26	13.1
340-419.....	2	3.4	2	5.9	8	7.5	12	6.1
420-839.....	4	6.9	3	8.8	8	7.5	15	7.6
Total.....	58	100.0	34	100.0	106	100.0	198	100.0
Acres per farm.....	150.1		243.2		222.4		204.8	

^a Farm survey. All farms include 30 or more acres.

program on their headquarters tract; and they rent out to younger farmers a large percentage of their tillable land that is best adapted to corn and soybeans.

An average of 20.8 more acres on rented farms than on part-owned farms may be attributed primarily to differences in renting agreements and perhaps somewhat to differences in ages and activities of operators. The average operator of rented farms was approximately four years younger than the average part-owner operator (Table 4). Operators who rent all the land they farm usually rent all of one fairly large tract (the headquarters tract) and a few fields.

The woodland and wasteland on the large tract is included in the total farm acreage. Operators who own a small headquarters tract and rent a number of fields, rent only tillable land, and the woodland and wasteland on the ownership unit on which the fields are located are not included in the total acreage. A difference of only two acres in tillable land on the average rented and average part-owned farm indicates that these conclusions are reasonably valid.

Land use. The average rented and part-owned farms have about

TABLE 4. — NUMBER AND PERCENTAGE OF OPERATORS IN VARIOUS AGE
GROUPS BY TENURE, WAYNE COUNTY, ILLINOIS, 1948^a

Age group (years)	Owned farms		Rented farms		Part-owned farms		All farms	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
20-29.....	2	3.5	4	11.8	13	12.3	19	9.6
30-39.....	8	13.8	20	58.8	35	33.0	63	31.8
40-49.....	9	15.5	3	8.8	28	26.5	40	20.2
50-59.....	21	36.2	5	14.7	17	16.0	43	21.7
60-69.....	14	24.1	2	5.9	12	11.3	28	14.2
70-79.....	3	5.2	..	....	1	.9	4	2.0
80-89.....	1	1.7	..	....	..	....	1	.5
Total.....	58	100.0	34	100.0	106	100.0	198	100.0
Average age of operators..	52		39		43		45	

^a Farm survey. All farms include 30 or more acres.

TABLE 5. — USE OF TILLABLE LAND PER FARM, BY TENURE,
WAYNE COUNTY, ILLINOIS, 1948^a

Item	Part-owned farms									
	Owned farms		Rented farms		Owned land		Rented land		All land	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Number of farms.....	58		34		106				198	
Corn.....	27.3	21.9	60.7	32.3	20.0	24.1	39.4	38.3	59.4	31.9
Soybeans.....	10.6	8.5	39.0	20.7	14.5	17.4	24.1	23.4	38.6	20.7
Total.....	37.9	30.4	99.7	53.0	34.5	41.5	63.5	61.7	98.0	52.6
Small grain.....	6.0	4.8	26.6	14.1	8.8	10.6	12.6	12.3	21.4	11.5
Grasses and/or legumes.....	72.4	58.2	52.0	27.6	37.3	44.8	23.7	23.0	61.0	32.8
Idle.....	7.8	6.3	9.8	5.2	2.4	2.9	2.9	2.8	5.3	2.9
Miscellaneous ^b.....	.3	.3	.1	.1	.2	.2	.2	.2	.4	.2
Total.....	124.4	100.0	188.2	100.0	83.2	100.0	102.9	100.0	186.1	100.0
Percent of land tillable.....	82.9		77.4		78.5		88.4		83.7	

^a Farm survey. All farms include 30 or more acres.^b Includes buckwheat, cane, milo maize, orchards, popcorn, and sunflowers.

the same acreage of tillable land and quite similar land-use programs, while the average owned unit has about 60 acres less tillable land and a land-use program that differs considerably from the other two. Rented and part-owned farms have 53.0 and 52.6 percent of their tillable land in corn and soybeans respectively, but owned farms have only 30.4 percent; and while the former have 14.1 and 11.5 percent, respectively, of the tillable land in small grain, owned farms have only 4.8 percent. However, owned farms have about 58 percent of their tillable land in grasses and legumes while part-owned farms have only 32.8 percent and rented farms only 27.6 percent (Table 5).

Owned farms comprise fewer acres of tillable land and a higher percentage of their area is in grasses and legumes because a large number of owner operators are semi-retired, raise only a limited amount of grain, and rent out to other operators a large percentage of the tillable land best adapted to corn and soybean production.

As the owned land on part-owned farms was made up primarily of headquarters tracts, about 22 percent more of it was in grasses and legumes than rented land which for the most part was made up of tracts other than headquarters. Approximately 42 percent of the owned tillable land was in corn and soybeans, and nearly 11 percent was in small grain. In contrast, about 62 percent of the rented tillable land was in corn and soybeans and about 12 percent was in small grain (Table 5).

Tracts per farm. Of the 198 operators interviewed, 156 carried on their farming activities on two or more tracts of land. Twenty-five of these farmers owned all the land they operated, 25 rented all of it, and

TABLE 6.—DISTRIBUTION OF FARMS BY NUMBER OF TRACTS
AND TENURE, WAYNE COUNTY, ILLINOIS, 1948^a

Number of tracts	Owned farms		Rented farms		Part-owned farms		All farms	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1.....	33	56.9	9	26.5	..	....	42	21.2
2.....	16	27.6	8	23.6	17	16.0	41	20.7
3.....	7	12.1	3	8.8	24	22.7	34	17.2
4.....	2	3.4	9	26.5	28	26.4	39	19.7
5.....	..	....	3	8.8	19	17.9	22	11.1
6.....	..	....	..	....	9	8.5	9	4.6
7.....	..	....	1	2.9	6	5.7	7	3.5
8-11 ^b.....	..	....	1	2.9	3	2.8	4	2.0
Total.....	58	100.0	34	100.0	106	100.0	198	100.0
Tracts per farm.....	1.6		3.0		4.1		3.2	

^a Farm survey. All farms include 30 or more acres.

^b The farms in the rented group had 11 tracts. The ones in the part-owned group had eight tracts each.

106 owned part and rented part. Thirty-three of the single tract farms were owned and the remaining nine were rented (Table 6).

Forty-one operators farmed two, 34 operators three, 39 operators four, 22 operators five, and 20 operators from six to eleven tracts of land. The part-owned group averaged 4.1 tracts, the rented group 3.0 tracts, while the owned group averaged only 1.6 tracts per farm.

The previously described inactivity of operators accounts for the relatively small number of tracts per farm on the owned group. Because part-owned farms usually have smaller headquarters tracts than rented ones, a part-owner operator must rent more tracts other than headquarters than a renter-operator in order to have a farming unit of comparable size (Table 6).

Size of tracts. Headquarters tracts, averaging 103 acres, were considerably larger than tracts other than headquarters which averaged 46.6 acres (Table 7).

The average headquarters tract on rented farms comprised 157.9 acres, on owned farms 116.4 acres, and on part-owned farms only 78.1 acres (Table 7).

Headquarters tracts on owned farms probably average smaller than those on rented farms because quite a few of the owner-operators are semi-retired and rent out part of the land on the ownership unit on which they live. In contrast, all operators on rented farms are active and operate practically all of the land on the ownership unit on which the headquarters is located.

There are doubtless several reasons why the headquarters tracts on part-owned farms are considerably smaller than those on owned and rented ones. In evaluating this difference it should be remembered that part-owner operators are considerably younger than owner operators and that

TABLE 7. — DISTRIBUTION AND AVERAGE SIZE OF HEADQUARTERS TRACTS AND OTHER TRACTS OF LAND BY ACREAGE AND TENURE, WAYNE COUNTY, ILLINOIS, 1948^a

Acres	Owned farms		Rented farms		Part-owned farms		All farms	
	Number	Percent	Number	Percent	Number ^b	Percent	Number	Percent
(Headquarters tracts)								
0-19.....	1	1.7	2	5.9	7	6.6	10	5.0
20-59.....	18	31.0	3	8.8	36	34.0	57	28.8
60-99.....	12	20.7	6	17.7	33	31.1	51	25.8
100-139.....	10	17.3	8	23.5	19	17.9	37	18.7
140-179.....	9	15.5	1	2.9	6	5.7	16	8.1
180-537.....	8	13.8	14	41.2	5	4.7	27	13.6
Total.....	58	100.0	34	100.0	106	100.0	198	100.0
(Other tracts)								
0-19.....	6	16.6	21	30.4	89	27.2	116	26.8
20-59.....	18	50.0	30	43.5	152	46.5	200	46.3
60-99.....	7	19.4	13	18.8	49	15.0	69	16.0
100-139.....	2	5.6	4	5.8	19	5.8	25	5.8
140-179.....	2	5.6	..	..	13	4.0	15	3.5
180-537.....	1	2.8	1	1.5	5	1.5	7	1.6
Total.....	36	100.0	69	100.0	327	100.0	432	100.0
Total tracts.....	94		103		433		630	
Average size of:								
Headquarters tracts....	116.4		157.9		78.1		103.0	
Other tracts.....	54.3		42.1		46.8		46.6	
All tracts.....	92.6		80.0		54.4		64.4	

^a Farm survey. All farms include 30 or more acres. Fifty-eight farms were owned, 34 were rented, and 106 were part owned.

^b Four of the headquarters tracts were rented. The remaining 102 were owned. Fifty-eight of the tracts other than headquarters were owned. The remaining 269 were rented.

many of them own the headquarters tract and rent the rest of the land they operate.

As typical owner operators are older, most of them probably bought land several years before the part-owner operators — when tractors and tractor equipment, limestone, and fertilizers were not in common use in the county. Because of this they needed only a small percentage of the money accumulated for operating purposes and the greater proportion could be used to buy land. When most of the part-owner operators bought land, tractors and tractor equipment, limestone, and fertilizers were in common use and many of them probably felt that their returns would be higher if they used their available money as operating capital and rented additional land.

An additional reason may be that as operators of owned farms are older, they have earned more money and are therefore able to buy larger tracts of land, or have started with smaller tracts and added to them. Still another reason may be that with succeeding generations and division of farms among heirs, inherited tracts that the heirs farm, rent out, or offer for sale are somewhat smaller than they were a decade or so ago.

Besides those mentioned, other factors such as the general price level, farm expenses, price of land, rent paid for land, and credit available to farmers, are partly responsible for this relationship.

On owned farms, tracts other than headquarters averaging 54.3 acres were only slightly larger than tracts on part-owned and rented farms which averaged 46.8 and 42.1 acres respectively. This difference exists because woods and wasteland are included with owned tracts while part-owners and renters who rent tracts other than headquarters are likely to rent only that part of the ownership unit that can be used for crop production (Table 7).

Factors influencing tenure pattern. The preceding analysis is intended to convey to the reader the complexity of land tenure in the claypan region. This is because the typical farmers, the majority of whom are part owners, operate several tracts of land that are either noncontiguous or if contiguous are located on different ownership units. This pattern is a reflection of many influences, several of which are evident and others not so easily discernible.

As in later life many operators or their widows elect to remain on the land they own in a semi-retired status, and rent out part, rather than sell it, a large number of ownership units have fields rented out to one or several operators. A similar situation exists where part-time farmers operate part of the land they own and rent out the remainder.

Most absentee landowners in Wayne County fall into two general classifications. Members of one group rent their land as a single farming unit, expect an agricultural income from it, and assist their tenants in organizing a profitable farming program. This usually does not contribute to the complexity of the tenure pattern. Because oil wells are fairly common in Wayne County and there is a reasonable possibility of discovering oil, and perhaps for other reasons, another group of owners retain title to their land even though they obtain little or no agricultural income from it. A number of these owners rent out fields to nearby operators on a share basis without too much concern about returns. A few owners let local people live in the farm house and give them what they produce on the land, or the privilege of subrenting it in exchange for taking care of any business connected with the farm or paying the taxes on it. When there is no farmhouse some of the owners give nearby operators what they produce on the land, or the privilege of subrenting it, for performing the same function. As long as the situation described above exists there is likely to be a rather complex tenure pattern on a large number of farms belonging to absentee owners.

What has been the trend. Although field renting has been a common practice in Wayne County for several decades, a noticeable increase in the percentage of farms that are part owned indicates that the tenure pattern has become more complex in recent years. According to the census about 33 percent of Wayne County farms were part owned in 1930, about

34 percent in 1940, and nearly 43 percent in 1945. The study here reported indicates that close to 50 percent were in this category in 1948. Mechanization more than any other single factor is probably the reason for this increase. Many farmers have acquired tractors and tractor equipment in recent years and have rented several tracts of land in addition to the one they own in order to make more effective use of it. This leads to a larger number of tracts per farm.

Is tenure pattern permanent? There is some question as to whether the present pattern will exist for a number of years or whether in view of recent developments it is merely a period of transition from a point at which a majority of the farms are part owned to a point at which a majority will be large owned or rented units. The authors believe that the answer to this question is closely related to farm incomes. If farm incomes were low the claypan region would probably remain an area in which part-owned farms would be prevalent and field renting a common practice. With relatively high farm incomes at the present time and favorable prospects for the future there are a number of other possibilities.

If claypan operators continue to accumulate money or can obtain and desire to use credit it is possible that the number of part-owned farms will decrease because many farmers will buy additional tracts rather than rent them. But even though they buy additional land, a large number will still be farming noncontiguous units because it may not be possible to buy land adjoining the tracts they already own.

Continued high farm incomes may cause many absentee landowners not doing so at present to rent an ownership to one operator and cooperate with him in organizing a satisfactory farming program. As more landowners do this, fewer fields will be available for renting and the number of operators desiring to do field renting will decrease. Investments by non-farmers in Wayne County land with an expectation of a return from farming would have a similar effect.

High farm incomes may enable a number of operators to accumulate sufficient money during their active years to sell or rent out all of their land and retire from it rather than remain on it in a semi-retired status. Should this occur, the number of ownership units on which fields are rented by nearby farmers would be considerably fewer than they are at the present time.

The tenure pattern and the individual operator. A claypan farmer who operates two or more tracts of land has at least three disadvantages which a farmer who is in a position to confine his operations solely to one tract does not have. (1) He must spend considerable time traveling to work, moving equipment from one tract to another, and hauling grain and hay he intends to feed or store to the headquarters tract. (2) As he may

rent several tracts for only one season, it is difficult for him to plan a complete farming program for a period longer than a year. (3) As he rents from more than one landowner he must make several different renting agreements.

Although these and other disadvantages exist, most operators who farm additional tracts have increased their incomes considerably because it has enabled them to make more effective use of their available labor, and the farm machinery they have on hand. Field renting is attractive to farmers because it does not require a cash outlay for land, or for buildings and equipment that would be needed if it were replaced with a program built around intensive enterprises such as poultry or dairy.

Recommendations and alternatives. Operators who desire to continue following this system will find it to their advantage to use a land-improvement program on the headquarters tract (particularly when they own it) and other tracts they own. They will also find it advantageous to rent fields where the landlord is willing to enter into a renting agreement for a period of years and cooperate in a land-improvement program, in preference to renting fields on which a land-improvement program is not in effect for a period of one year.

One possibility for farmers who seek alternative systems would be to intensify the farming program on the headquarters tract by adopting or increasing the size of the poultry and dairy enterprises. By doing this the operator could use the labor available on the headquarters tract and stop farming or farm fewer additional tracts. This procedure would require a cash outlay from which returns could not be expected immediately. Also, an operator who had followed the field-renting system may find that he might not be able to use effectively all of the machinery he has on hand.

Another alternative for part-owner operators would be to buy units adjacent to the headquarters tract that would make their farms large enough so that additional tracts would not have to be rented or purchased. Unfortunately, this alternative is available to only a very small percentage of the farmers in the claypan region.

A. J. CROSS and J. E. WILLS



Director, Extension Service in
Agriculture and Home Economics

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TABLE A.—INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-	
1934.....	93	86	76	96	79	68	71	80	68	75
1935.....	99	104	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	306	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	247	275	207	383	392	189	303	351	192
1949.....	192	218	218	200	343	346	176	308	325	176
1950 Feb....	190	209	209	198	240	307	155	320	330	180
Mar.....	190	210	211	200	247	336	168	327	334	187
Apr.....	190	210	214	200	232	258	129	319	337	190
May.....	193	217	227	202	268	332	163	319	348	195
June.....	195	218	226	204	275	285	140	323	363	199
July.....	202	232	241	204	353	393	193	326	368	196
Aug.....	206	234	240	206	383	344	167	333	394	209
Sept.....	210	237	243	208	437	339	163	339	403	212
Oct.....	210	234	235	208	538	549	264	342	416	217
Nov.....	213	242	240	210	484	429	204	344	415	215
Dec.....	218	247	252	212	402	371	175	357	426	218
1951 Jan....	223	255	261	217	372	393	181	355	424	221
Feb.....	228	267	277	220	276	307	140	357	429	220
Mar.....	228	268	276	224	303	376	168	360	...	222

TABLE B.—PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			May 1950	Current months, 1951		
	1935-39	1949	1950		Mar.	Apr.	May
Corn, bu.....	\$.66	\$1.17	\$1.35	\$1.35	\$1.64	\$1.67	\$1.67
Oats, bu.....	.31	.64	.76	.80	.92	.92	.88
Wheat, bu.....	.86	1.95	2.02	2.11	2.23	2.26	2.22
Barley, bu.....	.62	1.07	1.20	1.17	1.42	1.40	1.40
Soybeans, bu.....	.90	2.19	2.49	2.76	3.15	3.15	3.15
Hogs, cwt.....	8.52	18.58	18.08	18.60	21.30	20.60	20.50
Beef cattle, cwt.....	7.88	21.19	24.54	24.00	30.50	31.60	31.40
Lambs, cwt.....	8.36	23.43	25.06	24.60	37.20	36.40	33.50
Milk cows, head.....	58.00	198.33	216.67	215.00	260.00	265.00	270.00
Veal calves, cwt.....	8.66	25.05	28.01	27.20	34.00	34.20	34.20
Sheep, cwt.....	3.58	8.70	10.52	10.50	19.90	19.90	18.40
Butterfat, lb.....	.27	.58	.58	.58	.65	.64	.66
Milk, cwt.....	1.68	3.42	3.46	3.15	4.25	4.10	3.95
Eggs, doz.....	.19	.40	.31	.26	.40	.40	.41
Chickens, lb.....	.15	.27	.23	.22	.30	.32	.30
Wool, lb.....	.25	.42	.50	.46	1.15	.96	1.04
Apples, bu.....	1.08	2.38	2.24	2.50	2.00	2.00	1.95
Hay, ton ¹¹	9.39	22.68	20.77	21.70	22.40	22.00	21.70

¹¹ For sources of data in tables see the preceding issue.

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Articles in This Issue

	PAGE
Chicago People Are Drinking More Milk—R. W. BARTLETT.....	1189
How Illinois Livestock Is Marketed—W. J. WILLS.....	1195
Beef Cattle Numbers Respond to Earlier Changes in Beef Cattle Prices—G. L. JORDAN.....	1197

CHICAGO PEOPLE ARE DRINKING MORE MILK

At present the people of Chicago are drinking more milk than ever before. Per capita sales of milk in this market increased from .54 pint daily in 1934 to .82 pint daily in 1951, an increase of 52 percent. From 1945 to 1949 the nation was drinking less milk, but Chicago people were still drinking more. In 1949 per capita sales in the Chicago market were 8 percent higher than in 1945; those in the United States were 10 percent lower (Figure 1). Why was the Chicago market an exception to the downward trend of the national market?

Milk sales from 1934 to 1950. From 1934 to 1945 the trend in per capita sales of milk was upward both in the United States and in Chicago. Although from 1934 to 1940 increases were relatively small, the per capita sales in the United States in 1940 were 7 percent above those for 1934 and in Chicago they were 11 percent.

In both the United States and Chicago milk sales rose sharply from 1940 to 1945, but the nation showed a greater increase than Chicago. Per capita sales in the United States were 40 percent higher in 1945 than in 1940. In Chicago they were only 24 percent higher.

Three factors influenced the increase in milk sales from 1940 to 1945: sharp increases in consumer income, relatively low milk prices, and lack of competing products. In 1945 per capita consumer income in both Chicago and the United States was about double that of prewar (Figure 2). With high consumer income and shortages of new homes, automobiles, refrigerators, and many other consumer goods during World War II, more money was left to buy milk. During the five-year period ending

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

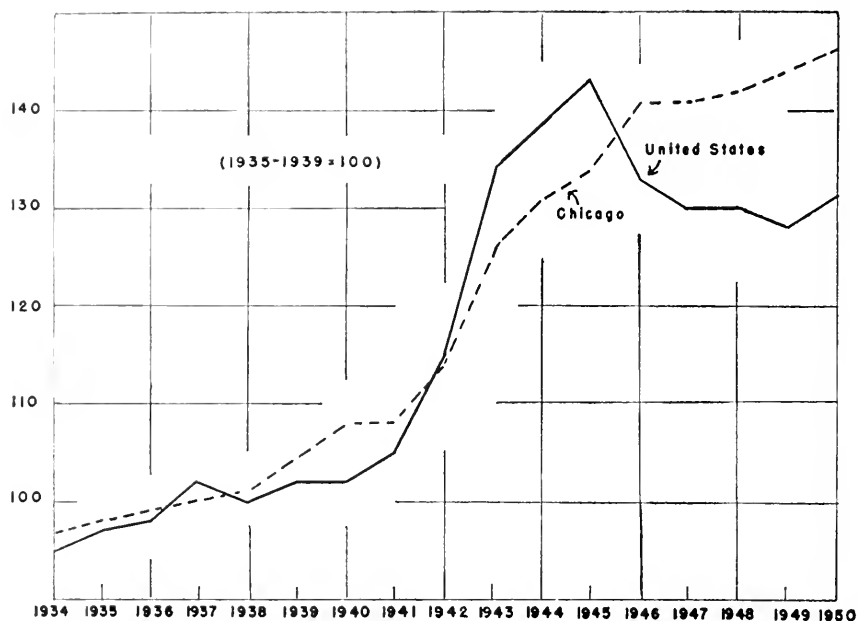


FIG. 1 — INDEXES OF CHANGES IN PER CAPITA SALES OF MILK, CHICAGO AND UNITED STATES, 1934 to 1950^a

^a Data from Chicago Federal Milk Market Administration and United States Department of Agriculture.

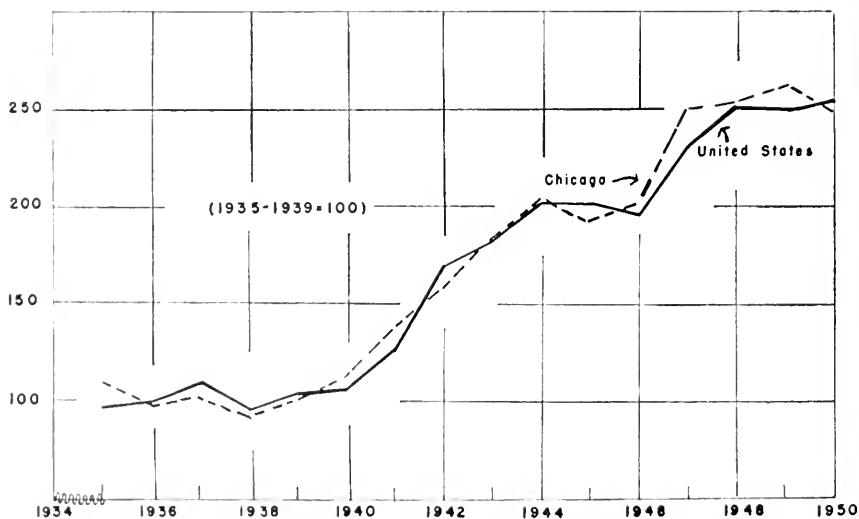


FIG. 2 — INDEXES OF CHANGES IN PER CAPITA CONSUMER INCOME, CHICAGO AND UNITED STATES, 1935 to 1950^a

^a Data from Sales Management: Survey of Buying Power.

in 1945, the price per single quart of home-delivered milk for 25 cities increased only 24 percent while that for Chicago increased 27 percent. This small price increase when consumer incomes rose so rapidly was one factor causing higher per capita sales of milk.

Between 1945 and 1949 the picture changed. Per capita sales of milk in Chicago continued to increase while those for the United States fell off sharply. In 1950 milk sales in both the United States and Chicago increased slightly.

The drop in national sales can be explained by the increasing competition which milk markets faced with automobiles, houses, and other consumer products. This same competition, however, existed in Chicago, yet Chicago milk sales went up.

From 1945 to 1949 consumer incomes in both the United States and in Chicago were about double the prewar incomes: that of the United States averaged 225 percent of prewar; that of Chicago, 231 percent (Figure 2). During the same period, consumer income increased at about the same rate in both the nation and the city. Thus the increase in milk sales in Chicago at a time when national sales were declining cannot be explained by relative changes in consumer income.

Quantity discounts. Quantity discounts for milk sold in two-quart and four-quart containers were a factor causing increases in milk sales in Chicago while those in the United States decreased. In April 1948, a million and a half gallons of milk and 5,600,000 half-gallons of milk were sold in the Chicago market (Table 1). Together this amounted to 33.2 percent of total sales. By April 1951, 2,656,000 units of milk were sold in gallon jugs and 10,865,000 were sold in half-gallons. Milk sold in gallons and half-gallon containers thus increased from 33.2 percent in April 1948, to 55.8 percent of total sales in April 1951. The greatest change in sales of milk in gallon jugs, a 46 percent increase, occurred from April 1950 to April 1951.

Sales of single quarts dropped from 31,881,000 units in April 1948, to 21,613,000 in April 1951. Single quarts of milk at both stores and homes were relatively high priced (Table 2). Data obtained in April 1951 showed that a frequent store price for milk in gallon jugs was 72 cents or 18 cents a quart, although in some parts of the marketing area milk could be obtained in gallon jugs at stores for as low as 63 cents (15.75 cents per quart).

Economy-minded people can now obtain milk in the Chicago market at prices that are low compared to those for other foods. In 1929, the usual price of milk delivered to the home or sold at the store was 14 cents per quart. Between 1929 and April 1951, food prices in Chicago increased

TABLE 1.—DISTRIBUTION OF UNITS OF FLUID MILK SOLD IN VARIOUS-SIZED CONTAINERS, CHICAGO MARKET, APRIL 1948 TO APRIL 1951^a:

	April 1948			April 1949		
	Number of units (thousands)	Total quarts	Percent of total	Number of units (thousands)	Total quarts	Percent of total
Gallons	1,500.6	6,002.4	11.2	1,530.6	6,122.4	11.0
Half-Gallons	5,619.8	11,239.6	21.0	6,848.1	13,696.2	24.9
Quarts	31,879.8	31,879.8	59.7	31,554.3	31,554.3	57.3
Pints	2,740.4	1,370.2	2.6	2,223.2	1,111.6	2.0
Half-Pints	10,699.6	2,674.8	5.0	9,580.3	2,395.1	4.4
Third-Quarts	787.2	262.4	0.5	701.9	234.0	0.4
Total		53,429.2	100.0		55,113.6	100.0

	April 1950			April 1951		
	Number of units (thousands)	Total quarts	Percent of total	Number of units (thousands)	Total quarts	Percent of total
Gallons	1,818.0	7,272.0	13.0	2,655.8	10,623.2	18.4
Half-Gallons	10,271.4	20,542.8	36.7	10,865.1	21,730.2	37.5
Quarts	24,480.6	24,480.6	43.8	21,613.1	21,613.1	37.3
Pints	2,241.4	1,120.7	2.0	2,496.3	1,248.2	2.2
Half-Pints	8,658.8	2,164.7	3.9	9,568.2	2,392.0	4.1
Third-Quarts	1,049.8	349.9	0.6	922.5	307.5	0.5
Total		55,930.7	100.0		57,914.2	100.0

^a Prepared by the Chicago Federal Milk Market Administrator, June 11, 1951.

TABLE 2.—DISTRIBUTION OF SALES OF WHOLE MILK THROUGH SPECIFIC OUTLETS, CHICAGO, 1930 AND 1949

	1930 ^a	1949 ^b
<i>Percent of total milk sales</i>		
Home deliveries	85	31
Stores	5	56
Hotels, restaurants, etc.	10	13
Total	100	100
<i>Percent of milk sales to homes and stores</i>		
Home deliveries	94	36
Stores	6	64
Total	100	100

^a From abstract of testimony of the Chicago Milk Wagon Drivers' Union, Dealers' Exhibit Number 9, 1940, p.8. This exhibit showed that 15 percent of total sales were distributed through stores and to hotels, restaurants, and hospitals. It is estimated that one-third of this volume was sold to stores while the other two-thirds went to other wholesale outlets.

^b From "Summary of a Survey on the Amount of Milk, Cream, and Related Products Distributed in Different Sized Containers and According to Type of Customer by 24 Handlers Under Order 41 During October, 1949." Prepared by office of the Chicago Federal Milk Market Administrator, April 28, 1950.

79 percent while per capita consumer income in 1951 was not quite double that of 1929. At 18 cents a quart (72 cents a gallon) milk prices in April 1951 were only 28 percent higher than those of 1929, while prices lower than 18 cents meant even smaller proportionate increases since 1929. In April 1951, the usual store prices for milk in half gallons was 20 cents

or 21 cents per quart. In contrast, the home-delivered price of single quarts in Chicago in April 1951 was 23.5 cents per quart. Very little milk was sold at this price.

Other factors helpful in augmenting sales in the Chicago area in recent years include increase in store sales of milk, greater use of homogenized milk, sales of milk in paper containers, the stabilizing effects of the Federal Milk Order and advertising and education.

Increased store sales of milk. In 1930, eighty-five percent of total sales of milk in Chicago were home deliveries (Table 2). By 1949, how-

TABLE 3. — MILK PRICES PAID BY CONSUMERS IN CHICAGO
AND IN 25 CITIES, APRIL 1945 TO 1951^a

Year	Chicago						25-city average
	At homes			At stores			To homes
	Single quarts	Half- gallons	Gallons	Single quarts	Half- gallons	Gallons	Single quarts
	(cents per unit)						
1945.....	16.5	32	62	14.5	..	..	12.0
1946.....	16.5	32	62	14.5	..	..	14.9
1947.....	20.5	40	78	18.5	..	..	18.7
1948.....	21.5	42	82	19.5	37	..	20.6
1949.....	20.5	40	78	18.5	35	65	20.0
1950.....	21.5	42	..	19.5	37	..	21.8
1951.....	23.5	46	..	21.5	40	..	..

^a From USDA Fluid Milk Reports.

ever, only 32 percent of the sales were being delivered to homes. Between 1930 and 1949 store sales of milk in Chicago increased from five percent to 56 percent of total milk sales. The estimated volume of milk going to outlets such as hotels, restaurants, and hospitals was 10 percent of total milk sales in 1930 and 13 percent in 1949.

Excluding sales to hotels, restaurants, and similar outlets, home deliveries fell off from 94 percent of total milk sales in 1930 to 36 percent in 1949. Estimated store sales, in contrast, increased from 6 percent of total sales in 1930 to 64 percent in 1949.

By 1949 vendors were selling 16.5 percent of the total sales of milk in the Chicago marketing area.¹ No records are available of vendor sales in this market for earlier periods.

Homogenized milk. Homogenization consists of breaking down the fat globules in milk and distributing them throughout the milk. This process prevents cream from rising. A great many people believe that

¹ From Chicago Federal Milk Market Administration, April 28, 1950.

homogenized milk is a better drink than ordinary milk. At present (1951) about 90 percent of all milk in Chicago is homogenized. Increasing use of homogenized milk has been one of the factors tending to increase per capita sales.

Sales of milk in paper containers. According to information compiled by the Pure-Pak Corporation, 71 percent of the milk sold throughout the United States by grocery stores in 1950 was packaged in paper containers. Only 29 percent was packaged in glass bottles. While data are not available, it is probable that about the same proportion of milk sold through Chicago stores goes out in paper containers as for the country as a whole.

The use of paper containers for milk since 1940 has increased greatly. According to the Pure-Pak Corporation, 4.8 percent of all milk sold in villages and cities in 1940 was packaged in paper containers. By 1950 this percentage had increased to 31.2. Increasing use of paper containers in the Chicago market has been one of the factors tending to increase per capita sales of milk.

Federal Milk Order. The present Federal Milk Order was first introduced into the Chicago market, September 1, 1939. With its provisions for pricing milk on a basis fair to both farmers and dealers, the Order has removed much of the friction that once existed between milk producers and milk dealers.

In addition to its pricing activities, the Chicago Federal Milk Marketing Administration audits the books of dealers, checks fat tests of milk sold, provides services to dairymen not members of cooperatives, and publishes complete marketing information on production, sales, and prices of milk.

Like many other things, it is impossible exactly to measure the effects of the use of the Chicago Federal Milk Order. It is reasonable to believe, however, that with fewer conflicts dealers have been able to center their major energies upon the marketing of milk and that this has been a factor causing increased per capita sales.

Education and advertising. For many years, the Milk Foundation in Chicago, which is financed jointly by dealers and farmers, has distributed information to schools, doctors, dentists, and various groups dealing with the beneficial effects of milk in a balanced diet. Also this organization has worked with the Illinois Dairy Association in publishing information to newspapers, magazines, and other outlets, recommending the use of more milk and other dairy products.

Many dealers also advertise milk in newspapers and through leaflets

in stores and at homes. While actual measurements of their effects cannot be measured, it is reasonable to believe that education and advertising has been a factor causing increased per capita sales of milk in the Chicago market.

R. W. BARTLETT

HOW ILLINOIS LIVESTOCK IS MARKETED

Illinois farmers have many alternative outlets through which they may market their livestock. The type market used varies between areas and between farmers within the area. The marketing pattern changes over a period of years.

Types of markets commonly used by Illinois farmers. *Terminal public markets*, where the livestock is sold by commission men to packers, other farmers, etc. A commission or selling expense and yardage is charged on a per-head basis. There are several potential buyers. Markets most frequently used by Illinois farmers are: Chicago, East St. Louis, Indianapolis, Peoria, Springfield, Evansville, and Bushnell. Over the past 30 years in the United States this method of selling has been decreasing in importance.

Auctions, where the livestock is sold to the highest bidder. Only one lot of livestock is sold at a time. The auction sells the livestock for the farmer and charges him a per-head fee or a percent of total sales value. The number of auctions has been increasing in Illinois in the last ten years.

Local markets, where the livestock is delivered to the buyer and he makes an offer. There is only one buyer. This includes country markets, local packers, local slaughterers, etc. There are hundreds of such local markets in Illinois.

Traders, where the buyer pays for the livestock and in turn delivers it to some other market or user. The trader has no specified buying point.

Other farmers, where one farmer sells replacement livestock or other livestock to another farmer for further feeding, breeding, etc., on the second farm.

In any comparison of markets the usual consideration is price. But weighing conditions, accuracy of scales, method of sorting, and differences in amount of shrink are equally important as price.

A study in three areas of Illinois for 1950 showed some wide variations in methods of marketing livestock. Many people think of Illinois greatness in livestock production in terms of farmers marketing large

numbers of animals at a given time. But this study shows that in southern Illinois 90 percent of the farmers marketed 46 percent of the cattle in lots of five or less; in western Illinois the figures were 81 and 34 respectively and in northwestern Illinois, 85 and 31. (Table 1.)

TABLE 1. — PERCENT OF CONSIGNMENTS AND TOTAL SALES OF CATTLE SOLD IN SPECIFIED SIZE LOTS BY ILLINOIS FARMERS IN THREE AREAS, 1950

Size of consignment	Southern		Western		Northwestern	
	Consignments	Sales	Consignments	Sales	Consignments	Sales
1-5	90.4	45.6	80.6	33.7	85.3	31.1
6-10	6.1	18.6	9.7	16.7	4.1	5.6
11-20	2.3	19.4	4.2	14.8	3.8	11.1
Over 20	1.2	16.4	5.5	34.8	6.8	52.2

Since a large portion of the cattle marketed from these three areas is in small numbers, market organizations need to be set up to handle small shipments effectively, both from the standpoint of out-of-pocket cost to the farmer and merchandising the cattle for the highest price.

The same type relationships were shown for hogs. (Table 2.)

TABLE 2. — PERCENT OF CONSIGNMENTS AND TOTAL SALES OF HOGS SOLD IN SPECIFIED SIZE LOTS BY ILLINOIS FARMERS IN THREE AREAS, 1950

Size of consignment	Southern		Western		Northwestern	
	Consignments	Sales	Consignments	Sales	Consignments	Sales
1-10	69.5	32.8	47.4	11.5	40.7	8.6
11-20	21.5	35.8	18.7	14.7	22.7	17.4
21-40	7.2	19.7	19.9	30.0	21.0	27.5
Over 40	1.8	11.7	14.0	43.8	15.6	46.5

Even a farmer selling small numbers of livestock during the year sells more than once during that time.

There are area differences in available markets. Most of the auctions and local markets are in those parts of the state where livestock production is heaviest.

Marketing channels used by farmers. Questionnaires were mailed to over 4,500 farmers in three areas of the state to determine where they market their livestock. The terminal public markets were the most important single type market used by farmers in all three areas for both cattle and hogs. (Table 3.)

Local markets are more important for hogs than for cattle, while auctions are more important outlets for cattle than hogs.

TABLE 3. — PERCENT OF CATTLE AND HOGS SOLD THROUGH VARIOUS MARKETS BY ILLINOIS FARMERS IN THREE AREAS, 1950

	Southern		Western		Northwestern	
	Cattle	Hogs	Cattle	Hogs	Cattle	Hogs
Terminal public markets.....	60.6	65.7	61.1	49.2	61.8	60.4
Local markets.....	9.9	24.9	10.4	43.0	7.7	34.0
Auctions.....	4.7	2.0	7.5	.4	15.8	2.6
Traders.....	10.3	3.1	13.9	1.6	4.7	.6
Other farmers.....	14.5	4.3	7.1	5.8	10.0	2.4

In southern Illinois where there are fewer local markets, local markets are less important for hogs than in the other two areas. Traders provide a more important market for cattle in southern and western Illinois than in northwestern Illinois.

The data on sheep were more limited but indicated a larger percent of sheep and lambs are sold through terminal markets than either cattle or hogs.

As the size of consignment increases a larger percent of the cattle are marketed through terminal markets. This was also true of hogs marketed from northwestern Illinois. This same relationship did not hold for hogs in the other two areas.

W. J. WILLS

BEEF CATTLE NUMBERS RESPOND TO EARLIER CHANGES IN BEEF CATTLE PRICES¹

A study of the factors affecting changes in beef cattle numbers indicated that the relationship between beef cattle prices and prices of all farm products combined for as long as six years back was the dominant influence on numbers on farms January 1 in the United States.

Method I. This method is based on year-to-year changes in numbers. The period covered was 1936 to 1950 inclusive. To estimate 1936 numbers, for example, the Illinois farm price of beef cattle (relative to comparable prices in 1910-14) six years prior to 1936 was divided by the Illinois farm price index for all farm products relative to that index in 1914, also for six years prior to 1936. This measure of the purchasing power of beef cattle prices in terms of all farm products for six years prior to 1936 was divided by the same value for seven years prior to 1936. Similar values were found for five years previous (divided by six years previous), four years previous and three and two years previous.

¹"Beef cattle" refer to all cattle on farms except the number of cows two years and over kept for milk.

Price relationships for the immediately preceding year appeared to have little influence.

The method can be illustrated for 1936 as follows:

Illinois farm price

of beef cattle:	1910-14	= \$ 5.93 = 100 percent of 1910-14
	1929	= 10.50 = 177 percent of 1910-14
	1930	= 9.00 = 152 percent of 1910-14

Index of prices of all farm products, Illinois 1910-14 = 100

1929 = 151

1930 = 130

The 1929 index of beef cattle prices, 1910-14 base, (177) divided by 1929 index of prices of all farm products, 1910-14 base, (151) multiplied by 100 equals 117.3. The comparable figure for 1930 was 116.8. The value for 1930 divided by the value for 1929, multiplied by 100, equals 99.6. This means that from 1929 to 1930 beef cattle prices became less favorable relative to prices of all farm products combined. Presumably the Illinois data reflect national conditions, hence have a wide application.

But we are interested, in the above illustration, in the influence of relative prices for several years on the number of beef cattle on farms January 1, 1936. From 1929 to 1930 price relationships were more unfavorable for beef cattle than for all farm products, but from 1930 to 1931 beef cattle prices fell less than prices of all farm products. The year-to-year change in the relative prices was favorable to beef cattle: the index for 1930 was 101.5. For 1932 relative to 1931 it was still more favorable, 112.8; for 1933 relative to 1932 it was very unfavorable, 84.4, and for 1934 relative to 1933, 86.8. The purchasing power of beef cattle prices each year relative to the previous year was used as a separate influence (variable) in a multiple correlation analysis. The influence of all five year-to-year changes in purchasing power of beef cattle prices on year-to-year changes of beef cattle numbers was measured.

If we let X_1 = (beef cattle numbers January 1 of a given year divided by numbers one year earlier) $\times 100$

and X_2 = (the purchasing power of beef cattle prices six years earlier divided by purchasing power seven years earlier) $\times 100$

X_3 = same, five years earlier \div six years earlier

X_4 = same, four years earlier \div five years earlier

X_5 = same, three years earlier \div four years earlier

X_6 = same, two years earlier \div three years earlier

the formula showing the influence of these factors was:

$$X_1 = 15.307 + .1857X_2 + .1177X_3 + .2719X_4 + .0706X_5 + .2153X_6.$$

It will be observed that X_4 , involving purchasing power relationships four and five years earlier had the largest influence, followed by X_6 , X_2 , X_3 , and X_5 in order of decreasing influences.¹

Although year-to-year changes in actual numbers during the period covered by this study agreed very closely with the year-to-year changes which would be estimated by using the equation, the important finding would seem to be, not the individual values used in the estimating equation above, but that beef cattle raisers responded to the favorable or unfavorable price ratios which existed during at least the most recent six years.

Method II. A second method using actual beef cattle numbers as percentage of the trend value (1926 to 1949 straight line trend) and using the purchasing power of beef cattle six (X_2), five (X_3), four (X_4), three (X_5), and two years (X_6) earlier gave estimated numbers approximately as close to actual numbers as the first method. In this case the purchasing power (price index of beef cattle compared with price index of all commodities, both having 1910-14 base) was used while in Method I year-to-year changes in the purchasing power were used. This method is slightly less reliable than the first method because it assumes that the 1926 to 1949 trend in numbers will continue into the future.

The amount of influence, in declining order, ranged from four years earlier, to two years earlier, to six years earlier, with five and three years earlier showing only small influence.² But with this method, as with the first method, the influence of purchasing power as long as six years earlier affected beef cattle numbers.

G. L. JORDAN

¹ Statistics obtained in this linear multiple correlation analysis were as follows:

$b_{12,3456} = +.1857$	$\sigma_{X_1}^2 = 16.4224$
$b_{13,2456} = +.1177$	$\sigma_{X_1} = 4.052$
$b_{14,2356} = +.2719$	$S^2 = 2.78$
$b_{15,2346} = +.0706$	$S = 1.67$
$b_{16,2345} = +.2153$	$R_{1,23456} = .9117$
	$R_{1,23456}^2 = .8312$

However using the formula to estimate numbers on farms and comparing the estimated numbers with the actual numbers, $R^2 = .9922$ and $R = .9961$. These latter values refer to the small differences between actual and estimated prices compared to the differences between actual prices and the arithmetic mean of the actual prices.

² The estimating equation was:

$$X_1 = -4.5158 + .2438X_2 + .0736X_3 + .2705X_4 + .0175X_5 + .2640X_6$$

Other statistics were: $\sigma_{X_1}^2 = 50.8196$ $S = 1.182$ $R_{1,23456} = .9725$
 $\sigma_{X_1} = 7.13$ $S^2 = 1.397$ $R_{1,23456}^2 = .9458$

However, using the formula to estimate numbers on farms and comparing the estimated numbers with the actual numbers, $R^2 = .9901$ and $R = .9951$, just a little lower than the values of these coefficients using the first method.



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TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-
1935.....	99	104	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	302	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	248	275	207	383	389	189	303	351	192
1949.....	192	218	217	200	352	362	181	304	325	176
1950.....	200	224	228	204	350	360	176	330	372	200
1950 Mar....	190	210	211	200	247	336	168	327	334	187
Apr.....	190	210	214	200	250	275	137	319	337	190
May.....	193	217	227	202	268	332	163	319	348	195
June.....	195	218	228	203	275	285	140	323	363	199
July.....	202	232	241	204	353	393	193	326	368	196
Aug.....	206	234	240	206	383	344	167	333	394	209
Sept.....	210	237	243	208	437	339	163	339	403	211
Oct.....	210	234	235	208	538	549	264	342	416	216
Nov.....	213	242	240	210	484	429	204	344	415	215
Dec.....	218	247	252	212	402	371	175	357	426	218
1951 Jan....	223	256	261	217	372	393	181	355	424	221
Feb.....	228	267	277	220	284	307	140	357	430	221
Mar.....	228	268	276	224	308	376	168	376	434	222
Apr.....	228	267	278	226	327	395	175	361	...	221

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS¹¹

Product	Calendar year average			June 1950	Current months, 1951		
	1935-39	1949	1950		Apr.	May	June
Corn, bu.....	\$.66	\$1.17	\$1.35	\$1.35	\$1.67	\$1.67	\$1.64
Oats, bu.....	.31	.64	.76	.81	.92	.88	.82
Wheat, bu.....	.86	1.95	2.02	1.94	2.26	2.22	2.17
Barley, bu.....	.62	1.07	1.20	1.17	1.40	1.40	1.33
Soybeans, bu.....	.90	2.19	2.49	2.84	3.15	3.15	3.02
Hogs, cwt.....	8.52	18.58	18.19	18.10	20.60	20.50	21.20
Beef cattle, cwt.....	7.88	21.19	24.54	25.80	31.60	31.40	31.20
Lamb, cwt.....	8.36	23.43	25.06	25.00	36.40	33.50	31.60
Milk cows, head.....	58.00	198.33	216.67	220.00	265.00	270.00	265.00
Veal calves, cwt.....	8.66	25.05	28.01	26.70	34.20	34.20	34.10
Sheep, cwt.....	3.58	8.70	10.52	9.50	19.90	18.40	16.50
Butterfat, lb.....	.27	.58	.58	.57	.64	.66	.66
Milk, cwt.....	1.68	3.42	3.46	3.05	4.10	3.90	3.75
Eggs, doz.....	.19	.40	.31	.25	.40	.41	.39
Chickens, lb.....	.15	.27	.23	.21	.32	.30	.27
Wool, lb.....	.25	.42	.50	.50	.96	1.04	.96
Apples, bu.....	1.08	2.38	2.24	2.50	2.00	1.95	1.95
Hay, ton ¹²	9.39	22.68	20.77	20.20	22.00	21.70	19.90

¹¹ For sources of data in tables see the May issue.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. H. P. Rusk, Director. Acts approved by Congress May 8 and June 30, 1914

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS

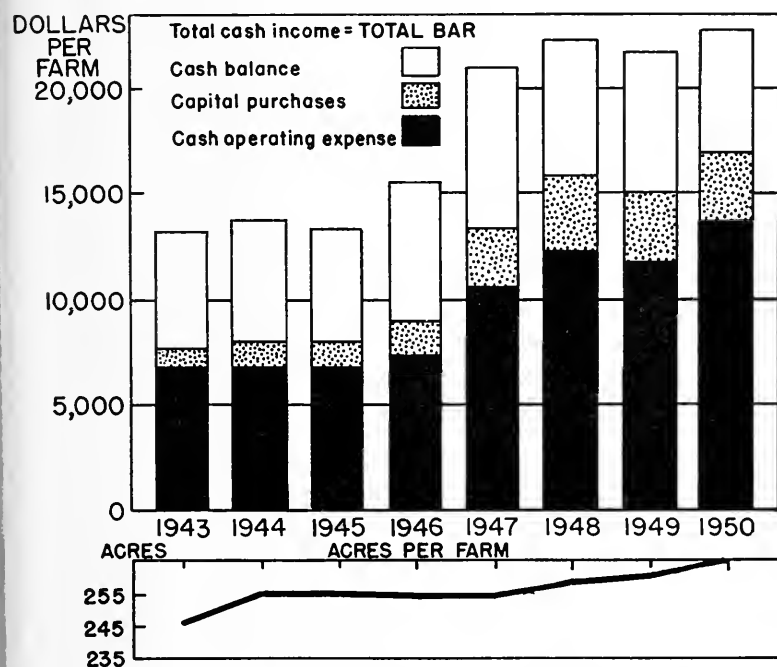
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G. J. Jordan, Editor

August-September, 1951

Numbers 195 and 196

Summary of Annual Farm Business Reports of 2,824 Illinois Farms For the Year 1950



Total Cash Income, Capital Purchases, Cash Operating Expenses, and Cash Balance for Illinois Farms, 1943-1950. Averages Obtained by Weighting Area Averages by Number of Census Farms.

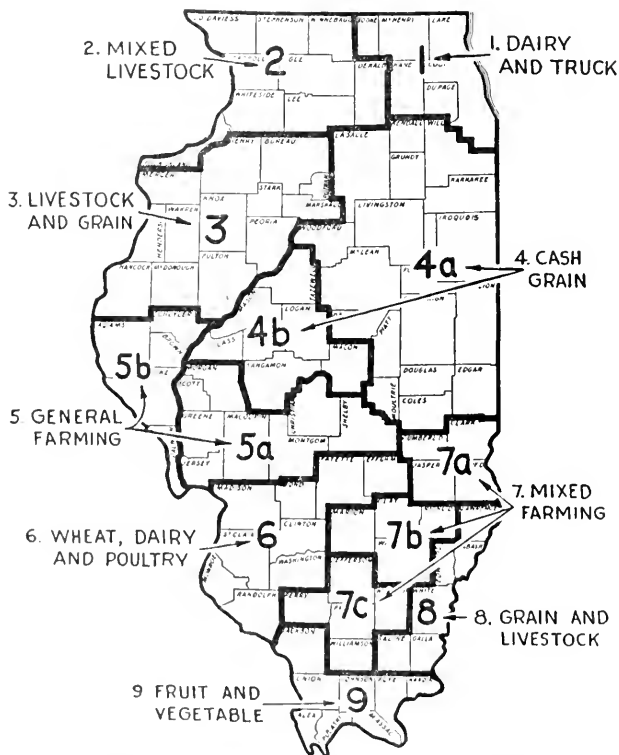
Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

FOREWORD

Economic developments growing out of the unstable international conditions, changes in domestic agricultural policies, and technical progress in production may make changes desirable in plans of individual farms for the coming year and for years ahead. The decisions to make such changes can be made most readily by farmers who are well informed. The wisdom of their decisions will depend in large measure upon how well they are able to put their farms in good balance.

The analysis of farm income and expenses presented in this report provides practical information planned to help make decisions on a sound basis. Every farmer needs accurate records on his own business in order to make use of such data. Every farmer needs to keep well informed about his business. Teachers, farm advisers, and all who assist in planning improved systems of farming should base recommendations upon sound information.

H. C. M. CASE



THE NINE MAJOR TYPE-OF-FARMING
AREAS IN ILLINOIS

SUMMARY OF FARM BUSINESS RECORDS ON 2,824 FARMS IN ILLINOIS FOR 1950¹

A. G. MUELLER, F. J. REISS, and J. B. CUNNINGHAM

Net cash income an acre. The 1950 average net cash income an acre for accounting farms was lower than the income in previous years while the 1950 net income with inventory changes included rose sharply. The net cash income of \$14.92 an acre in 1950 may be compared to the income of \$17.45 in 1949 and the \$23.28 in 1947.

The average net cash income an acre for Illinois accounting farms from 1936 to 1950 was as follows:

1936.....\$7.40	1941.....\$ 9.91	1946.....\$19.63
1937..... 5.33	1942..... 14.99	1947..... 23.28
1938..... 5.25	1943..... 18.55	1948..... 17.76
1939..... 5.40	1944..... 17.30	1949..... 17.45
1940..... 6.82	1945..... 15.35	1950..... 14.92

The net cash income an acre was computed by subtracting the value of unpaid family and operator's labor from the net cash balance for the year and dividing that difference by the number of acres in the farm. State averages were calculated by weighting farming type area averages by the acres of land in farms (census) in each area.

These returns do not include inventory changes, the increase in value of capital items, or the money value of farm products consumed from the farm. The net cash income an acre provides a good basis for comparing incomes of groups of farms over a period of years, or for comparing the level of income for different areas of the state. During any period of years, earnings fluctuate more widely from year to year when inventory changes are included since inventory changes reflect the quantities of livestock and grain on hand January 1 and the inventory price of these products as well as the increase or decrease in remaining value of capital items.

Effect of price levels on earnings. In 1950 the ratio of prices received by Illinois farmers to prices paid for supplies was 101 percent of the 1910-14 base. This ratio was 99 in 1949. The index of prices received by Illinois farmers increased from 246 in 1949 to 258 in 1950 (1910-14 = 100). For the same years, the index of prices paid by farmers in the United States increased from 250 to 255.

Accounting farms represent better than average conditions. Previous studies indicate that accounting farms are much larger than the

¹Averages in this report include 2,289 Farm Bureau Farm Management records and 535 extension project records. A total of 2,673 Farm Bureau Farm Management records and 596 extension project records were summarized in 1950.

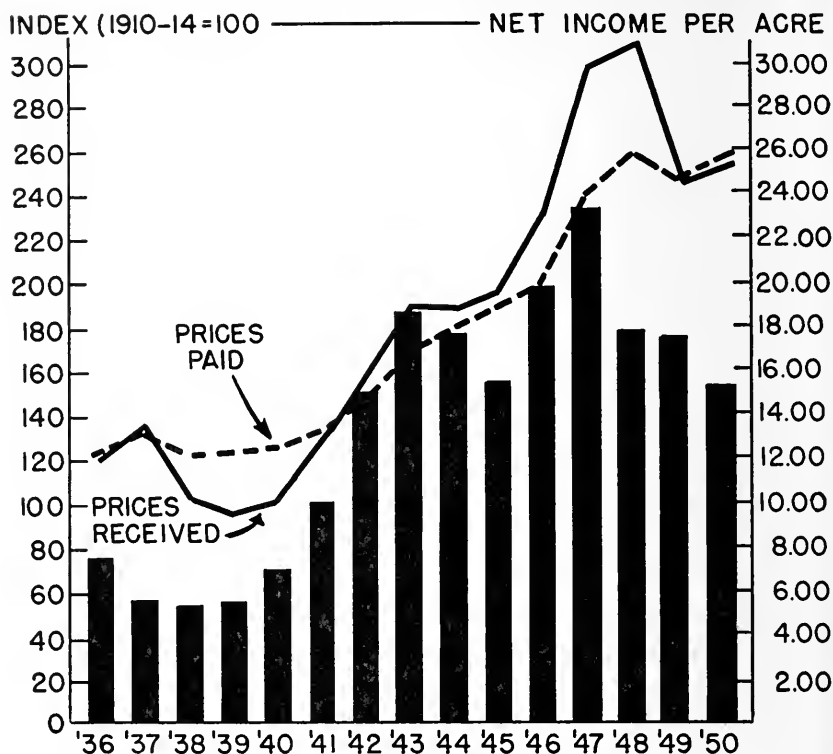


FIG. 1.— AVERAGE NET CASH INCOME AN ACRE (UNPAID LABOR DEDUCTED) ON ILLINOIS ACCOUNTING FARMS, PRICES PAID BY FARMERS IN THE UNITED STATES, AND PRICES RECEIVED BY ILLINOIS FARMERS, 1936-1950

average size of farms for the state. Also, these farms are, as a group, located on better quality soils. Hence, any per farm or per acre averages in this report should **not** be interpreted as representative for all farms in the state. Figures on costs and earnings per farm will be much higher because of the greater than average size of farm and better quality of soil.

Data presented in Tables 1 through 17 are useful in showing trends in income, expenses and investments over a period of years, since the farms included in accounting projects remain fairly constant from one year to the next.

Value of farm products used in the household. In the farm business reports, which have been published separately, and in the tables at the back of this report, the farm values of meat, milk, eggs and other farm products used in the household were included as a source of income.

These products have also been included in comparing the 1944-1950 records in Table 1.

Depreciation and maintenance expenses for the residence are omitted on all owner-operated farms. Thus, the accounting for farm buildings agrees with income tax rulings.

Cash income per farm. The average cash income and expenditures on Illinois farms reached new highs in 1950 (Table 1). Total cash income in 1950 increased by five percent over 1949. Total cash expenditures increased by 12 percent for the same years, resulting in a somewhat lower cash balance on Illinois farms.

The cash balance of \$5,817 per farm in 1950 is the lowest recorded in the last five years. Although prices of farm products increased in 1950, the price increases came in the latter part of the year and this increase was not fully reflected in sales of farm products. Cash farm expenditures in 1950 increased more than cash income, resulting in the lower net cash balance for 1950.

Income tax payments, debt and interest payments must be deducted from the cash balance per farm to determine the amount available for farm family living and savings. Also, on a large number of farms, this cash income must be divided between the landlord and operator or between more than one farm family where profit sharing agreements are in effect.

TABLE 1.—SELECTED ITEMS OF INCOME AND EXPENSE ON ILLINOIS ACCOUNTING FARMS, 1944-1950^a

Item	1944	1945	1946	1947	1948	1949	1950
Acres per farm.....	255	255	254	254	259	261	265
Cash income per farm.....	\$13 748	\$13 376	\$15 544	\$21 054	\$22 157	\$21 560	\$22 710
Cash operating expense.....	6 831	6 779	7 421	10 566	12 197	11 755	13 640
Capital purchases.....	1 167	1 229	1 659	2 712	3 516	3 359	3 253
Cash expenditures per farm.....	7 998	8 008	9 080	13 278	15 713	15 114	16 893
Cash balance.....	\$ 5 750	\$ 5 368	\$ 6 464	\$ 7 776	\$ 6 444	\$ 6 445	\$ 5 817
Inventory increase.....	-274	190	2 500	4 595	1 976	85	4 621
Farm products used in household..	405	413	456	485	492	408	390
Cash balance plus inventory increase and farm products used in household.....	\$ 5 881	\$ 5 971	\$ 9 420	\$12 856	\$ 8 912	\$ 6 938	\$10 828
Unpaid labor.....	1 634	1 696	1 783	2 085	2 078	2 116	2 099
Net farm earnings.....	\$ 4 247	\$ 4 275	\$ 7 637	\$10 771	\$ 6 834	\$ 4 822	\$ 8 729
Gross receipts per acre ^b	\$40.27	41.44	\$53.34	\$79.65	\$64.12	\$56.04	\$70.55
Total expense per acre ^c	23.62	24.61	23.13	37.59	37.76	37.53	37.75
Net receipts per acre ^b	\$16.65	\$16.83	\$30.21	\$42.06	\$26.36	\$18.51	\$32.80
Net income per acre (cash basis) ^d ..	17.30	15.35	19.63	23.28	17.76	17.45	14.92

^a These state averages were obtained by weighting area averages. The last item, net income per acre (cash basis), was weighted by the acres of land in farms in each area; all other items were weighted by the number of census farms in each area.

^b Receipts include inventory changes and farm products used in household.

^c Total expense includes unpaid labor charge.

^d Cash balance less unpaid labor.

Cash farm business expenditures. The cash expenditures of \$16,893 per farm in 1950 reached a new high in the history of farm accounting in Illinois. Cash expenditures in 1950 exceeded the 1949 figure by \$1,779 and were more than double the cash expenditures of \$8,008 in 1945.

With cash farm operating expenses increasing rapidly in 1950, Illinois farmers spent fewer dollars for capital items in 1950 than they spent in 1948 and 1949 (Table 1). This decrease was recorded in all three items of capital including land improvements, buildings, and machinery.

During the past years, the proportion of cash expenditures to total cash income has been increasing. As this trend continues in the future, successful farm operations will be dependent on a stable and high-level cash income.

Inventory increases. Inventory values increased \$4,621 on Illinois farms in 1950. This increase is in contrast to the increase of \$85 per farm in 1949. With inventory changes included net farm earnings were \$8,729 in 1950, an increase of \$3,907 or 81 percent over the earnings of \$4,822 in 1949. This large increase in farm earnings with inventory changes included is in contrast with a 10 percent decline in net cash income in 1950.

The increase of \$4,621 in inventories on Illinois farms in 1950 was due to higher inventory prices of farm products at the end of the year and to increases in physical quantities of products, particularly grain, on hand at the end of the year. Although this inventory change was not available for family living expenses in 1950, a large part of this inventory change was probably converted into cash during the first half of 1951.

The inventory change for a single year represents the change in the combined values of livestock, grains, improvements, and machinery from the beginning to the end of the year. Within a single year the beginning and ending inventories are for exactly the same farms. This may not be the case when comparisons are made from one year to the next.

Prices of farm products. Indicative of what happened to farm prices in 1950 is Figure 2 which gives the average monthly price of corn and hogs from January 1950 through July 1951 (Fig. 2 represents a corn-hog ratio of about 14). Average Illinois corn prices were at a low of \$1.18 a bushel in January 1950, rose steadily during the year and reached \$1.60 a bushel in January 1951.

Hog prices were \$15.00 a hundredweight in January 1950, moved upward in an irregular pattern to \$21.00 a hundredweight in August 1950, and then dropped off sharply in October, November, and December as the spring pig crop moved to market. Hog prices recovered in early 1951 to prices above \$20.00 a hundredweight.

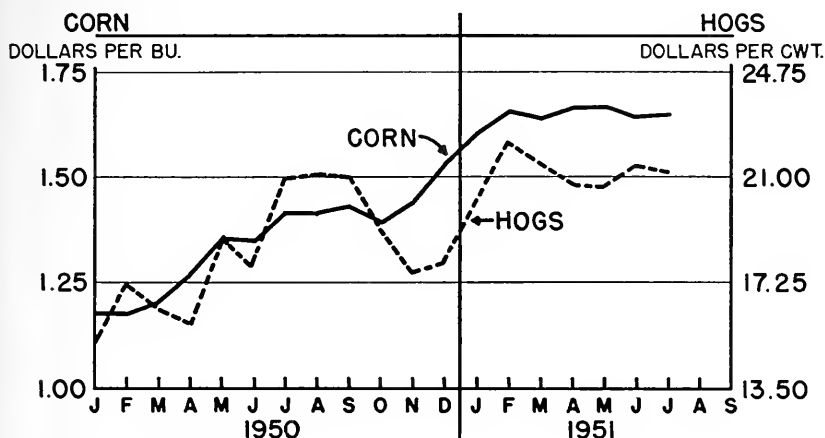


FIG. 2.— AVERAGE MONTHLY ILLINOIS FARM PRICES OF CORN AND HOGS FOR 1950 THROUGH JULY, 1951

Crop yields in Illinois. Crop yields in 1950 were 15 percent above the 1935-44 average but eight percent below the 1949 yields (Figure 3). The lowest relative yields in Illinois were in an area below St. Louis and in north central Illinois. A belt of 25 counties extending from west central to southeastern Illinois had yields 30 percent or more above the 1935-44 average.

The state average corn yield of 51 bushels an acre was five bushels below the 1949 estimate and 10 bushels lower than the record yield in 1948. Adequate moisture was present in 1950 but apparently the cool weather in late July and August was too low for optimum plant development. More than the usual number of poorly filled ears and barren stalks were found in the 1950 crop.

The 1950 soybean production of 95 million bushels was the largest ever produced in Illinois. The yield of 24 bushels an acre was three bushels above average and farmers planted a record number of acres to soybeans. The 1950 oats yield of 42.5 bushels per acre was slightly lower than the 1949 yield. Total wheat production was considerably lower in 1950. The 1950 average yield of wheat was 20.0 bushels per acre, 4.5 bushels below the 1949 crop and the acreage harvested was much lower because of wheat acreage allotments and poor seeding conditions in the fall of 1949.

Variations in net cash income an acre. The 1950 net cash income an acre varied from \$1.81 in Area 7 to \$22.57 in Area 4 (Table 2). Area 4 was the only area to show an increase over 1949. The big decline in net cash income an acre in farming type Area 1 does not represent conditions

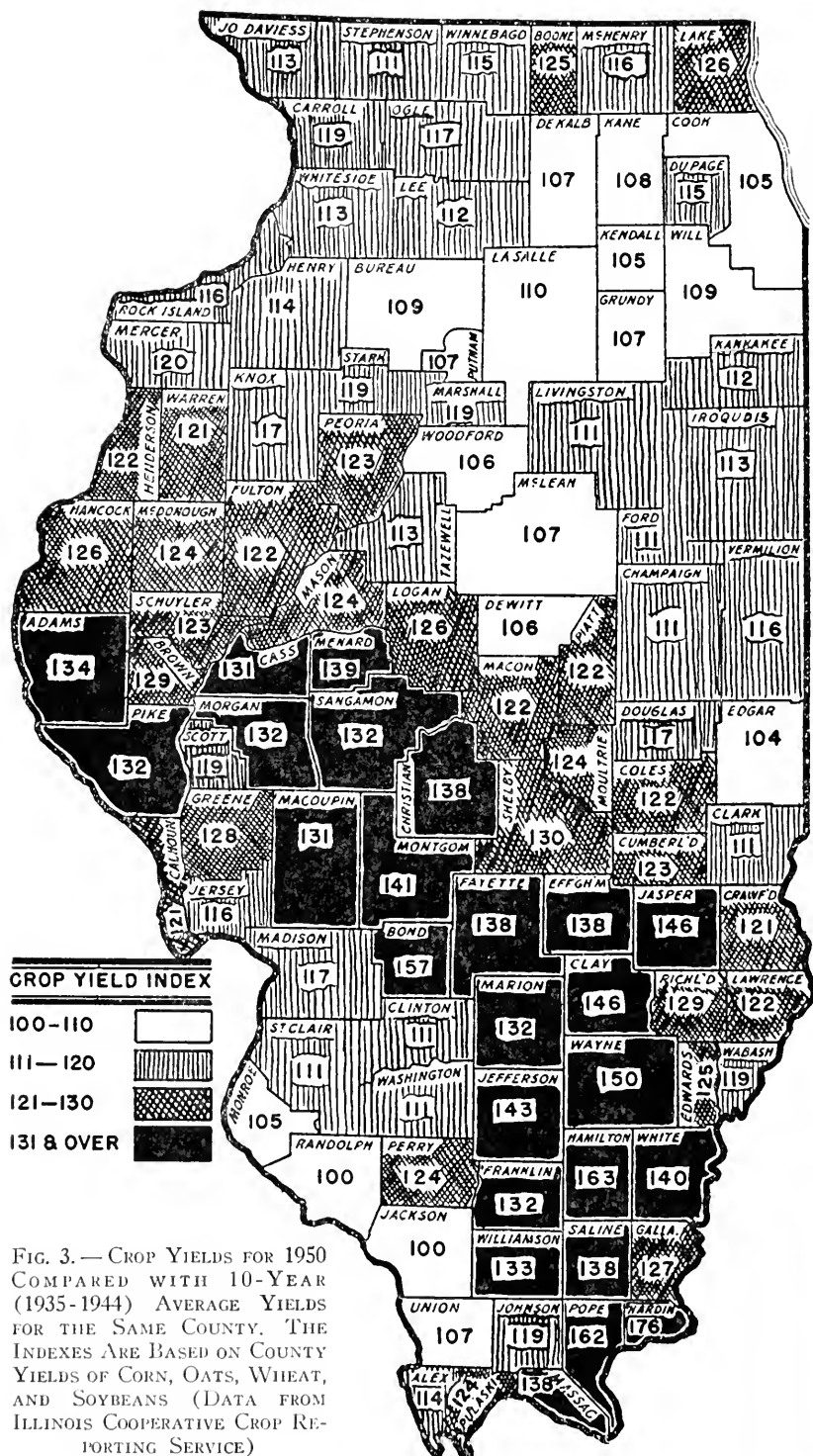


TABLE 2.—NET INCOME AN ACRE (CASH BASIS) FOR ILLINOIS ACCOUNTING FARMS
BY FARMING-TYPE AREAS FOR THE PERIODS 1925-1929, 1930-1934, 1935-
1939, 1940-1944, AND 1945-1949 AND FOR THE YEARS 1949, 1950^a

Farming-type areas	1925- 1929	1930- 1934	1935- 1939	1940- 1944	1945- 1949	1949	1950
Area 1, Chicago Dairy.....	\$9.59	\$5.25	\$5.61	\$13.72	\$20.45	\$22.79	\$ 6.77
Area 2, Northwestern Mixed Livestock.....	7.94	4.92	7.23	16.23	21.79	18.40	11.72
Area 3, Western Livestock and Grain.....	9.05	4.86	6.99	16.93	24.16	21.56	18.39
Area 4, East-Central Cash Grain.....	8.91	4.46	7.15	18.15	24.25	22.21	22.57
Area 5, West-Central General Farming.....	6.35	3.23	4.62	11.58	18.22	18.82	17.60
Area 6, St. Louis Dairy and Wheat.....	3.26	2.03	3.32	5.79	7.77	6.68	5.89
Area 7, South-Central Mixed Farming.....	2.21	.91	1.96	3.47	4.57	4.93	1.81
Area 8, Wabash Valley Grain and Livestock..	4.57	1.73	3.96	6.58	7.89	7.66	4.08
State Average (weighted by acres in each area)	\$7.13	\$3.74	\$5.70	\$13.51	\$17.68	\$17.45	\$14.92

^a Includes records of the Farm Bureau Farm Management Service for 1938-1950.

on all farms in the area. Although this area is named the Chicago Dairy Area, a sizable number of records summarized from this region are specialized feeder cattle farms. The nearby location of the Chicago Stock Yards permits these farms to carry on short time feeding operations with heavy cattle. In any one year the net cash position of these farms is influenced by purchase and sale transactions within the year and by the amount of cash tied up in feeder cattle at the close of the calendar year.

Variations in net income with inventory change included. When inventory changes were included, the 1950 average net income an acre for the state increased substantially. (Table 3.) The large increase in inventories in 1950 more than offset the decrease in net cash income in all areas of the state. The range in net income an acre with inventory change included was from \$44.30 in Area 3 to \$8.33 in Area 7.

TABLE 3.—NET INCOME AN ACRE (INVENTORY BASIS) FOR ILLINOIS ACCOUNTING FARMS
BY FARMING-TYPE AREAS FOR THE PERIODS 1925-1929, 1930-1934, 1935-
1939, 1940-1944, AND 1945-1949 AND FOR THE YEARS 1949, 1950^a

Farming-type areas	1925- 1929	1930- 1934	1935- 1939	1940- 1944	1945- 1949	1949	1950
Area 1, Chicago Dairy.....	\$11.04	\$2.64	\$10.03	\$20.54	\$28.89	\$20.29	\$37.43
Area 2, Northwestern Mixed Livestock.....	15.11	2.70	11.45	22.23	33.22	20.81	44.20
Area 3, Western Livestock and Grain.....	10.24	2.84	11.43	22.53	32.38	20.79	44.30
Area 4, East-Central Cash Grain.....	10.30	2.76	11.05	21.81	32.64	22.37	40.13
Area 5, West-Central General Farming.....	7.69	1.99	7.92	15.38	24.26	17.96	32.39
Area 6, St. Louis Dairy and Wheat.....	5.41	.92	5.55	8.37	13.01	9.04	13.35
Area 7, South-Central Mixed Farming.....	3.34	.55	3.76	5.46	8.80	6.02	8.33
Area 8, Wabash Valley Grain and Livestock	5.34	1.20	5.22	9.21	13.97	8.87	12.05
State Average (weighted by acres in each area).....	\$ 8.59	\$2.20	\$ 9.23	\$17.56	\$25.97	\$17.77	\$33.04

^a Includes records of the Farm Bureau Farm Management Service for 1938-1950.



























































NUMBERS OF LIVESTOCK BY TYPE OF FARM				
	GRAIN	HOG	BEEF CATTLE	DAIRY
LITTERS OF PIGS  = 5 LITTERS	  	        	    	  
NUMBER OF HENS  = 50 HENS	 	 	 	  
MILK COWS  = 3 COWS		 		       
OTHER CATTLE  = 7 ANIMAL UNITS		  	        	

FIG. 4. — PHYSICAL QUANTITIES OF LIVESTOCK ON 220-ACRE FARMS OF FOUR MAJOR TYPES, 1950

Physical quantities of livestock on farms of different types and sizes. Farms in the Farm Bureau Farm Management Service are classified into grain and livestock farms on the basis of the disposal of crops produced on the farm, that is, whether the major portion of the crops produced on the farm are sold or fed to livestock. The kind of livestock receiving the major portion of the feed fed determines the type of livestock farm.

The physical quantities of livestock and feeds fed on farms of selected type and size are shown in Table 4. The data in this table can be used as a guide in determining the approximate type of farming practiced on any one farm; also the approximate feed requirements needed for different quantities and combinations of livestock on a particular farm. For example, the 220-acre hog farms utilized more than twice the bushels of corn and half the tons of hay as did similar size dairy farms in 1950.

A graphic picture of the quantity of livestock on each of the four types of farms is shown in Figure 4.

TABLE 4.—PHYSICAL QUANTITIES OF LIVESTOCK AND FEED FED ON FARMS OF DIFFERENT TYPES AND SIZES, FARM BUREAU FARM MANAGEMENT SERVICE, 1950

Item	Size of farm				
	50-179 acres	180-259 acres	260-339 acres	340-499 acres	Over 500 acres
<i>Grain Farms</i>					
Acres per farm.....	150	225	303	408	680
Livestock per farm					
Sheep, animal units ^a.....	.7	.5	.6	1.1	1.5
Hens, number.....	78	90	94	80	77
Milk cows.....	2.0	2.9	4.0	3.0	3.9
Other cattle, animal units ^a	5.2	8.0	12.4	21.8	32.7
Hogs, number of litters.....	8	12	13	19	22
Feed fed per farm					
Corn, bushels.....	873	1 235	1 598	2 613	3 146
Oats, bushels.....	479	572	703	881	962
Hay, tons.....	12.6	20.9	29.1	39.2	46.2
Pasture, days.....	1 813	2 657	3 718	5 057	7 492
Supplement, pounds.....	8 746	12 160	15 016	20 016	25 037
<i>Hog Farms</i>					
Acres per farm.....	146	220	300	409	660
Livestock per farm					
Sheep, animal units.....	1.1	.8	1.6	1.7	3.8
Hens, number.....	112	93	100	87	56
Milk cows.....	4.0	3.8	3.9	4.0	4.4
Other cattle, animal units.....	9.2	19.3	23.1	36.8	51.0
Hogs, number of litters.....	36	44	54	62	95
Feed fed per farm					
Corn, bushels.....	3 785	4 967	6 012	7 766	11 666
Oats, bushels.....	1 460	1 598	1 959	2 314	3 143
Hay, tons.....	31.4	40.1	47.0	59.4	102.3
Pasture, days.....	3 318	5 015	5 977	8 744	11 434
Supplement, pounds.....	31 880	38 806	42 398	58 696	76 132
<i>Beef Cattle Farms</i>					
Acres per farm.....	150	223	300	418	641
Livestock per farm					
Sheep, animal units.....	2.1	.5	.6	3.6	3.6
Hens, number.....	48	110	90	66	149
Milk cows.....	1.4	2.5	2.2	2.7	4.6
Other cattle, animal units.....	37.9	58.7	82.2	110.8	114.0
Hogs, number of litters.....	18	22	26	33	35
Feed fed per farm					
Corn, bushels.....	4 799	6 414	9 064	12 113	12 923
Oats, bushels.....	1 073	1 593	1 940	2 166	2 009
Hay, tons.....	59.3	65.1	86.5	98.0	118.1
Pasture, days.....	4 592	6 993	10 413	14 099	16 388
Supplement, pounds.....	29 233	40 843	52 444	85 566	72 793
<i>Dairy Farms</i>					
Acres per farm.....	137	214	300	408	....
Livestock per farm					
Sheep, animal units.....	.4	.4	.5	.2	....
Hens, number.....	128	137	138	109	....
Milk cows.....	18.0	23.7	29.2	33.8	....
Other cattle, animal units.....	1.4	1.2	3.6	15.1	....
Hogs, number of litters.....	9	15	16	27	....
Feed fed per farm					
Corn, bushels.....	1 487	2 095	2 703	4 252	....
Oats, bushels.....	1 281	1 564	1 948	2 795	....
Hay, tons.....	70.4	82.4	93.3	126.8	....
Pasture, days.....	4 580	6 638	8 131	11 942	....
Supplement, pounds.....	24 065	30 837	39 792	53 732	....

^a An animal unit of sheep is five mature ewes or 10 lambs. An animal unit of other cattle is 1,000 pounds live weight.

LIVESTOCK ENTERPRISE ANALYSES

Livestock enterprise analyses were made on Farm Bureau Farm Management farms on which the enterprise record was complete and accurate and on which the enterprise was as large or larger than a given minimum size. These minimum size limits were six litters of pigs, five cows in beef and dairy herds, three animal units or about 15 head of sheep, and 100 hens. Minimum size limits were used because many of the records on smaller enterprises are incomplete or inaccurate in feed or production records.

Tables 5, 6, 7, and 8 present different levels in the returns per \$100 feed fed and an average of all records. Comparison of groups of farms with high and low returns per \$100 feed fed will indicate the phases of various enterprises that contribute to high or low returns in livestock production. For example, Table 5 indicates that the pounds of milk per milk cow, the feed cost per unit of production, and death loss are related to returns per 100 dollars feed fed.

TABLE 5.—DAIRY ENTERPRISES ON ALL FARMS AND ON FARMS
GROUPED BY RETURNS PER \$100 FEED FED

Items	All farms	Returns per \$100 feed fed	
		\$190-229	\$100-139
Number of farms.....	362	77	71
Number of cows in herd.....	15.7	15.4	15.7
Number of milk cows.....	15.2	14.8	15.3
Percent of milk cows dry.....	18	18	19
Total animal units in herd.....	22.5	21.5	23.3
Pounds of beef produced.....	7 838	8 177	7 055
Total returns from cattle.....	\$5 846	\$6 297	\$4 840
Value of feed fed to cattle.....	3 387	3 070	3 818
Returns per \$100 feed fed.....	173	205	127
Returns above feed per milk cow.....	162	218	67
Total pounds of milk produced.....	126 872	130 998	117 866
Pounds of milk per milk cow.....	8 347	8 851	7 704
Pounds of butterfat per milk cow.....	319	345	303
Pounds of beef per cow in herd.....	499	531	449
Weight of death loss: pounds.....	579	418	695
Percent death loss by weight.....	7.4	5.1	9.8
Feed cost per unit (1000 lbs. milk or 100 lbs. beef).....	\$16.50	\$14.43	\$20.26
Prices received for each:			
100 lbs. milk produced.....	3.27	3.37	3.16
100 lbs. cattle sold.....	21.37	20.75	21.57
<i>Lbs. feed per unit of milk and beef</i>			
Grain.....	225	201	276
Protein and mineral feeds.....	44	36	47
Total concentrates.....	269	237	323
Hay and dry roughage.....	490	431	614
Hay silage.....	66	19	105
Corn and other silage.....	342	246	439
Pasture (pasture days).....	18	17	21
Pasture days per animal unit.....	167	172	166

TABLE 6.—POULTRY ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER \$100 FEED FED

Items	All farms	Returns per \$100 feed fed	
		\$140-179	\$70-109
Number of farms.....	314	70	107
Weight of poultry produced.....	1 892	2 320	1 683
Total returns from poultry.....	\$1 406	\$1 710	\$1 113
Total value of feed fed.....	1 151	1 115	1 174
Returns per \$100 feed fed.....	122	153	95
Returns above feed cost per hen.....	1.15	2.68	— .28
Average number of hens.....	221	222	214
Eggs produced per hen.....	177	194	158
Percent production.....	48	53	43
Hens in Oct., Nov., Dec.....	290	255	254
Percent production in Oct., Nov., Dec.....	44	52	38
Feed Req. Units (1 doz. eggs or 1.5 lbs. wt. produced).....	4 535	5 134	3 947
Feed cost per unit.....	\$.25	\$.22	\$.30
Pounds concentrates per unit.....	7.9	6.7	9.2
Weight of poultry sold.....	1 335	1 519	1 214
Average price per pound.....	.24	.26	.22
Price per dozen eggs sold.....	\$.36	\$.37	\$.34

TABLE 7.—HOG ENTERPRISES ON ALL FARMS AND ON FARMS GROUPED BY RETURNS PER \$100 FEED FED

Items	All farms	Returns per \$100 feed fed	
		\$190-229	\$100-139
Number of farms.....	583	115	138
Pounds of pork produced.....	48 465	53 991	40 789
Total returns from hogs.....	\$9 051	\$10 401	\$7 526
Total value of feed fed.....	5 957	5 747	5 865
Returns per \$100 feed fed.....	152	181	128
Returns above feed per litter.....	94	129	55
Number of litters farrowed.....	33	36	30
Number of pigs weaned.....	214	239	186
Pigs weaned per litter.....	6.5	6.6	6.2
Number that died after weaning.....	14	10	16
Weight of death loss: pounds.....	1 051	868	1 094
Percent of weight produced.....	2.2	1.6	2.7
Average weight per hog sold.....	242	240	239
Average price received.....	\$17.94	\$18.25	\$17.71
Feed cost per 100 lbs. produced.....	12.29	10.64	14.38
<i>Lbs. feed per 100 lbs. produced</i>			
Grain.....	395	347	466
Protein and mineral feeds.....	45	37	51
Total concentrates.....	440	384	517
Hay.....	5.2	7.3	4.9
Pasture (pasture days).....	2.3	2.3	2.3

TABLE 8.—BEEF CATTLE ENTERPRISES ON ALL FARMS AND ON FARMS
GROUPED BY RETURNS PER \$100 FEED FED

Items	All farms	Returns per \$100 feed fed	
		\$190-229	\$100-139
Number of farms.....	402	74	78
Number of cows in herd.....	16.6	18.0	14.9
Number of milk cows.....	1.2	1.2	1.3
Total animal units in herd.....	27.0	28.1	26.5
Pounds of beef produced.....	13 437	14 637	11 915
Total returns from cattle.....	\$4 018	\$4 695	\$3 133
Value of feed fed to cattle.....	2 371	2 266	2 490
Returns per \$100 feed fed.....	169	207	126
Total pounds of milk produced.....	6 144	6 743	6 790
Pounds of milk per milk cow.....	5 120	5 619	5 223
Pounds of beef per cow in herd.....	809	813	800
Weight of death loss: pounds.....	629	673	750
Percent of weight produced.....	4.7	4.6	6.3
Feed cost per unit (1000 lbs. milk or 100 lbs. beef).....	\$16.87	\$14.80	\$19.77
Prices received for each:			
100 lbs. milk produced.....	2.94	2.95	2.68
100 lbs. cattle sold.....	26.22	26.31	25.22
<i>Lbs. feed per unit of milk and beef</i>			
Grain.....	240	201	293
Protein and mineral feeds.....	17	14	18
Total concentrates.....	257	215	311
Hay and dry roughage.....	536	499	624
Hay silage.....	7	4	18
Corn and other silage.....	114	38	184
Pasture (pasture days).....	37	36	41
Pasture days per animal unit.....	193	194	194

TABLE 9.—SHEEP ENTERPRISES

Items	Native flocks	Feeder sheep
Number of farms.....	167	34
Pounds wool and mutton produced.....	3 499	10 928
Total returns from sheep.....	\$944	\$3 753
Total value of feed fed.....	534	2 061
Returns per \$100 feed fed.....	177	182
Weight of death loss: pounds.....	567	1 902
Percent of total production.....	16.2	17.4
Feed cost per cwt. produced.....	\$15.26	\$18.86
Price received per cwt.....	26.09	26.73
Price paid for sheep bought.....	25.76	25.75
<i>Lbs. feed per cwt. produced:</i>		
Concentrates.....	166	413
Hay.....	529	342
Silage.....	23	110
Pasture (pasture days).....	45	32

TABLE 10.—FACTORS HELPING TO ANALYZE THE FARM BUSINESS BY FARMING-TYPE AREAS, 1950

Items	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8	Area 9
Number of farms.....	103	384	450	1 237	203	220	122	75	30
Size of farm, acres.....	220	233	282	282	270	244	270	266	210
Total investment per acre.....	\$ 252	\$ 252	\$ 222	\$ 235	\$ 171	\$ 121	\$ 94	\$ 107	\$ 80
Cash receipts, total.....	\$30 050	\$29 509	\$30 400	\$26 605	\$22 594	\$12 438	\$10 621	\$12 194	\$ 5 490
Cash expenditures, total.....	26 672	24 594	23 048	18 121	15 538	8 888	8 243	9 174	4 298
Cash balance.....	3 378	4 915	7 352	8 484	7 056	3 550	2 378	3 020	1 192
Increase in inventory.....	6 752	7 575	7 296	4 956	3 998	1 819	1 760	2 117	1 190
Total unpaid labor.....	1 888	2 183	2 172	2 115	2 300	2 115	1 890	1 937	1 527
Net farm income.....	\$ 8 242	\$10 307	\$12 476	\$11 325	\$ 8 754	\$ 3 254	\$ 2 248	\$ 3 200	\$ 855
Inventory basis									
Gross receipts per acre ^a	95.46	96.30	87.62	79.04	71.26	44.47	36.06	40.76	26.70
Total expenses per acre.....	56.54	50.41	41.82	37.62	37.31	29.50	26.32	27.22	21.17
Net receipts per acre.....	\$ 39.12	\$ 45.89	\$ 45.80	\$ 41.42	\$ 33.95	\$ 14.97	\$ 9.74	\$ 13.54	\$ 5.53
Cash basis									
Gross receipts per acre.....	136.47	126.54	107.95	94.28	83.59	51.04	39.37	45.91	26.19
Total cash expenses per acre ^b	129.70	114.82	89.56	71.71	65.99	45.15	37.56	41.83	27.79
Net cash income per acre.....	\$ 6.77	\$ 11.72	\$ 18.39	\$ 22.57	\$ 17.60	\$ 5.89	\$ 1.81	\$ 4.08	\$ -1.60
Crop yields per acre									
Corn, bushels.....	58.3	64.4	65.0	52.5	61.6	48.4	40.2	49.5	45.2
Soybeans, bushels.....	21.7	25.6	30.9	28.3	27.8	22.4	17.9	17.6	23.6
Oats, bushels.....	56.4	55.9	50.4	45.0	42.5	28.6	21.9	20.7	28.8
Wheat, bushels.....	27.7	36.4	34.2	28.1	26.9	17.3	11.4	17.5	16.5

^a Farm products used in household included.^b Includes charge for unpaid labor.

TABLE 11.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS
IN FARMING-TYPE AREA 5, 1950

Items	Acres per farm					
	60-139		140-219		220-299	
	Livestock	Grain	Livestock	Grain	Livestock	Grain
Number of farms	16	9	27	10	19	10
Acres per farm	111	182	174	249	248	448
Inputs (cost items)						
Land improvements	\$ 259	\$ 323	\$ 383	\$ 648	\$ 552	\$ 1 054
Buildings	478	348	513	622	883	1 274
Machinery and power	2 042	2 555	2 714	3 161	3 312	4 486
Labor	2 229	2 027	2 414	2 519	3 167	4 490
Taxes	335	613	405	891	516	910
Miscellaneous	209	115	206	154	432	233
Capital charge	1 213	1 586	1 520	2 511	2 109	3 431
Feed fed to productive livestock	5 016	2 104	5 153	3 200	7 890	5 918
Total inputs	\$11 781	\$ 9 671	\$13 308	\$13 706	\$18 831	\$21 401
Returns (income items)						
Labor and machinery	184	414	364	240	293	289
AAA and miscellaneous	69	132	123	183	191	229
Crop returns	5 257	10 720	7 143	16 414	9 664	20 842
Livestock returns	4 404	2 515	3 670	1 275	5 075	4 343
Cattle—including dairy products	4 080	1 113	3 910	2 992	6 848	5 580
Hogs	34	76	76	541	541	137
Sheep	508	576	1 137	542	591	579
Poultry						
Total returns	\$14 536	\$15 622	\$16 423	\$21 646	\$23 203	\$31 913
Net returns	2 755	5 951	3 115	7 940	4 372	10 512
Rate earned on investment, percent	16.35	23.76	15.24	20.81	15.36	20.52
Labor and management earnings	\$ 4 262	\$ 7 467	\$ 4 605	\$ 9 449	\$ 5 815	\$12 072
Gross earnings per acre	94.45	74.11	68.25	74.11	58.02	66.06
Gross expense per acre	58.75	32.79	41.61	32.12	36.67	32.73
Net earnings per acre	\$ 35.70	\$ 41.32	\$ 26.64	\$ 41.99	\$ 26.11	\$ 31.12
Land use						
Percent of land area tillable	83.4	89.4	83.2	92.6	75.1	83.6
Percent of tillable land in:						
Corn	34.2	32.9	28.2	29.8	27.8	27.3
Soybeans	17.9	28.3	21.5	36.4	21.1	30.5
Wheat	11.7	13.8	12.7	12.7	12.3	9.3
Hay and pasture	7.9	6.9	7.1	6.9	9.2	12.3
Other crops	27.8	18.0	29.3	13.6	28.7	20.5
Expense factors	.15	.1	1.2	.6	.9	.1
Labor cost per crop acre	\$ 28.26	\$ 13.64	\$ 20.46	\$ 11.94	\$ 20.13	\$ 13.96
Machinery and power cost per crop acre	25.89	17.19	23.01	14.98	21.05	13.95
Building cost per acre	4.31	1.91	2.95	2.50	3.44	1.96

TABLE 12.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS
IN FARMING-TYPE AREA 6, 1950

Items	Acres per farm					
	60-139		140-219		220-300	
	Livestock	Dairy	Livestock	Dairy	Grain	Livestock
Number of farms.....	8	15	37	40	9	28
Acres per farm.....	116	116	180	174	184	252
Inputs (cost items)						
Land improvements.....	\$ 244	\$ 310	\$ 319	\$ 361	\$ 309	\$ 417
Buildings.....	408	524	463	433	255	448
Machinery and power.....	1 694	2 155	2 138	2 221	1 893	2 318
Labor.....	1 943	2 532	2 314	2 427	2 001	2 787
Taxes.....	249	239	300	324	204	324
Miscellaneous.....	166	222	160	233	148	312
Capital charge.....	975	984	1 142	1 150	1 293	11 354
Feed fed to productive livestock.....	3 092	3 837	4 072	3 890	1 986	4 199
Total inputs.....	\$ 8 771	\$10 803	\$10 908	\$11 039	\$ 8 229	\$11 632
Returns (income items)						
Labor and machinery.....	284	142	155	139	94	145
AAA and miscellaneous.....	91	54	141	118	94	136
Crop returns.....	4 320	3 117	5 201	5 125	7 212	6 073
Livestock returns						
Cattle—including dairy products.....	2 212	5 965	2 603	5 373	1 795	2 753
Hogs.....	1 754	786	2 546	902	565	3 053
Sheep.....	...	53	53	20	517	98
Poultry.....	790	675	1 075	787	754	1 046
Total returns.....	\$ 9 451	\$10 739	\$11 774	\$12 464	\$11 031	\$13 304
Net returns.....	680	-64	866	1 425	2 802	1 672
Rate earned on investment, percent.....	8.49	4.68	8.79	11.20	15.83	11.18
Labor and management earnings.....	\$ 2 135	\$ 1 392	\$ 2 292	\$ 2 853	\$ 4 401	\$ 3 107
Gross earnings per acre.....	55.32	68.51	44.41	49.96	49.16	37.26
Gross expense per acre.....	41.04	60.55	33.28	35.14	26.90	25.24
Net earnings per acre.....	\$ 14.28	\$ 7.96	\$ 11.13	\$ 14.82	\$ 22.26	\$ 12.02
Land use						
Percent of land area tillable.....	90.2	83.0	78.0	83.5	85.8	74.2
Percent of tillable land in:						
Corn.....	22.2	23.0	20.3	21.8	20.6	20.4
Soybeans.....	12.0	18.7	12.8	13.6	17.2	12.7
Oats.....	9.4	13.1	10.6	11.0	11.0	10.2
Wheat.....	22.9	14.7	21.4	17.1	29.3	21.0
Hay and pasture.....	22.7	40.3	32.2	34.6	24.6	31.4
Other crops.....	3.8	.2	2.7	1.9	2.0	3.5
Expense factors						
Labor cost per crop acre.....	\$ 23.05	\$ 33.68	\$ 21.06	\$ 21.44	\$ 15.50	\$ 16.59
Machinery and power cost per crop acre.....	20.09	28.67	19.46	19.62	14.66	15.74
Building cost per acre.....	3.52	4.52	2.57	2.49	1.39	1.78

TABLE 13.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE OF FARMS
IN EDWARDS, JEFFERSON, MARION, AND WAYNE COUNTIES, 1950^a

Items	Acres per farm					
	60-179		180-339		340 or more	
	Dairy	Livestock	Grain	Dairy	Livestock	Grain
Number of farms.....	4	22	7	5	23	16
Average size of farm.....	123	147	144	247	241	258
Inputs per farm (cost items)						
Soil improvements.....	\$ 255	\$ 509	\$ 349	\$ 545	\$ 770	\$ 603
Buildings and fences.....	332	338	82	379	308	379
Machinery and power.....	1 340	1 575	1 174	2 107	2 290	2 060
Labor.....	1 950	1 638	1 488	2 267	1 978	1 924
Taxes.....	154	214	149	366	347	311
Miscellaneous and livestock expense.....	177	79	41	155	118	522
Capital charge.....	549	732	992	992	2 182	153
Total nonfeed input.....	\$ 4 747	\$ 5 085	\$ 3 715	\$ 6 725	\$ 7 019	\$ 6 328
Value of feed fed to.....						
Sheep.....		\$ 53	\$ 16	\$ 95	\$ 68	\$ 35
Poultry.....	642	563	462	1 030	661	318
Cattle.....	1 587	833	344	2 706	1 538	831
Hogs.....	487	2 048	594	883	2 537	1 165
Total feed fed.....	(2 716)	(3 497)	(1 416)	(4 714)	(4 824)	(2 232)
Total farm inputs.....	\$ 7 463	\$ 8 582	\$ 5 131	\$11 439	\$11 843	\$ 8 560
Returns per farm (income items)						
Labor, machinery, AAA, buildings, and miscellaneous.....	\$ 132	\$ 257	\$ 91	\$ 364	\$ 426	\$ 176
Crop returns.....	2 935	3 895	3 527	7 064	5 907	6 712
Livestock returns from.....						
Sheep.....		112	177	184	74	40
Poultry and eggs.....	798	764	331	1 147	369	851
Cattle (includes dairy sales).....	3 424	1 752	694	4 273	1 128	941
Hogs.....	738	2 868	1 103	1 223	6 234	2 387
All livestock.....	(5 010)	(3 496)	(2 128)	(6 820)	(7 413)	(3 043)
Total farm returns.....	\$ 8 097	\$ 9 648	\$ 5 746	\$14 248	\$13 746	\$ 9 931
Net returns.....	\$ 634	\$ 1 066	\$ 615	\$ 2 809	\$ 1 903	\$ 1 371
Rate earned on investment.....	10.7	12.3	12.1	19.2	13.4	11.5
Labor and management earnings.....	\$ 1 665	\$ 2 338	\$ 1 904	\$ 4 130	\$ 3 175	\$ 2 574
Gross earnings per acre.....	45.44	45.86	30.02	38.56	38.75	29.88
Gross expense per acre.....	35.82	33.63	22.75	23.17	26.14	20.46
Net earnings per acre.....	9.62	12.23	7.27	15.39	12.61	9.42
Lend use.....						
Percent of land area tillable.....	70.0	83.2	85.3	84.2	77.2	80.4
Percent tillable land in:						
Corn.....	21.9	22.7	34.3	23.3	22.9	22.4
Soybeans.....	13.6	11.5	16.5	13.5	13.3	17.2
Oats.....	9.9	4.0	4.1	8.0	3.5	21.4
Wheat.....	9.2	13.2	9.3	5.5	12.8	5.9
Hay and pasture.....	50.4	48.1	35.8	44.4	45.2	14.1
						35.6
						39.4
						82.6
						17.2
						24.5
						12.4
						6.5
						39.4
						10.06
						30.54
						20.48
						74.8
						21.9
						21.4
						5.9
						12.4
						14.1
						35.6

^a The farm records in these counties may be considered as typical of record keeping farms in Farming Type Areas 7 and 8.

AREA GROUPING OF FARM BUREAU FARM MANAGEMENT SERVICE RECORDS

Data presented in the following tables (Tables 14-17) were taken from Farm Bureau Farm Management Service Records. Area grouping of these records does not follow the conventional farming-type area lines because the analysis of these records was based on size and type of farm separations. This classification of farms by type or system of farming tends to eliminate the need for classification by conventional farming-type area lines since there is more difference between types of farms within an area than between the same type of farm in different areas.

The area grouping of counties shown below was determined on the basis of geographical location as well as the predominance of types of farming practiced by cooperating farmers.

<i>General farming</i>	<i>Cash grain</i>	<i>Livestock and grain</i>	<i>Dairy</i>
Adams	Champaign	Bureau	Boone
Brown	Coles	Carroll	Cook
Cass	DeWitt	DeKalb	DuPage
Clark	Douglas	Henderson	Grundy
Fulton	Edgar	Henry	JoDaviess
Hancock	Ford	Knox	Kane
Mason	Iroquois	LaSalle	Kendall
Menard	Kankakee	Lee	Lake
Morgan	Livingston	McDonough	McHenry
Pike	Logan	Marshall-Putnam	Stephenson
Sangamon	McLean	Mercer	Will
Schuyler	Macon	Ogle	Winnebago
	Moultrie	Peoria	
	Piatt	Rock Island	
	Tazewell	Stark	
	Vermilion	Warren	
	Woodford	Whiteside	

TABLE 14.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE DAIRY AREA, 1950

Items		Under 180 acres		180-259 acres	260-339 acres
		Hog farms	Dairy farms	Dairy farms	Dairy farms
Number of farms.....	1	12	54	32	10
Average size of farm.....	2	161	136	215	300
Soil rating on improved land.....	3	2.8	3.8	4.2	4.2
Inputs per farm:					
Soil improvements.....	4	\$ 374	\$ 323	\$ 403	\$ 603
Buildings and fences.....	5	808	923	1 082	1 196
Machinery and power.....	6	2 648	2 785	3 535	4 301
Labor.....	7	2 320	2 827	3 603	3 921
Taxes.....	8	446	524	626	923
Miscellaneous.....	9	394	504	547	678
Capital charge.....	10	2 007	1 698	2 368	3 108
Total non-feed input.....	11	(8 997)	(9 584)	(12 164)	(14 730)
Feed fed to:					
Sheep.....	12	\$ 38	\$ 18	\$ 7	\$ 40
Poultry.....	13	820	590	638	546
Dairy cattle.....	14	1 416	5 266	6 353	7 410
Other cattle.....	15	1 474	179	204	546
Hogs.....	16	6 060	1 475	2 193	3 000
Total feed fed.....	17	(9 808)	(7 528)	(9 395)	(11 542)
Total farm inputs.....	18	18 805	17 112	21 559	26 272
Total inputs per acre.....	19	116.80	125.82	100.27	87.57
Returns per farm:					
Labor and machinery.....	20	\$ 180	\$ 224	\$ 302	\$ 402
AAA, buildings and miscellaneous.....	21	106	116	186	151
Feed and grain returns.....	22	9 429	7 481	9 587	13 694
Returns from:					
Sheep.....	23	\$ 46	\$ 38	\$ 8	\$ 91
Poultry.....	24	1 090	715	781	641
Dairy cattle.....	25	2 552	8 387	10 516	13 231
Other cattle.....	26	2 330	398	214	1 020
Hogs.....	27	8 610	2 224	3 214	4 130
All livestock.....	28	(14 628)	(11 762)	(14 733)	(19 113)
Total farm returns.....	29	24 343	19 583	24 808	33 360
Net returns per farm.....	30	\$ 5 538	\$ 2 471	\$ 3 249	\$ 7 088
Net returns per \$100 non-feed input.....	31	62	26	27	48
Cash balance per farm.....	32	\$ 5 213	\$ 3 619	\$ 5 301	\$ 7 927
Inventory increase.....	33	3 377	2 242	2 132	3 918
Farm products consumed.....	34	767	327	350	324
Less unpaid labor.....	35	1 812	2 018	2 166	1 972
Net farm earnings.....	36	\$ 7 545	\$ 4 170	\$ 5 617	\$10 197
Net earnings per acre.....	37	46.86	30.66	26.12	33.99
Rate earned on investment, percent.....	38	18.80	12.28	11.86	16.40
Total investment per acre.....	39	\$ 249	\$ 250	\$ 220	\$ 207
Selected farm operating costs:					
Hired labor charge.....	40	\$ 508	\$ 808	\$ 1 438	\$ 1 949
Labor cost per crop acre.....	41	18.71	32.49	29.78	22.40
Machinery hire.....	42	322	408	305	444
Machinery repairs and maintenance.....	43	489	550	735	939
Gasoline, fuel and oil.....	44	528	452	597	723
Machinery depreciation.....	45	844	819	1 264	1 219
Power and machinery cost per crop acre.....	46	21.35	32.01	29.21	24.58
Crop acres per farm.....	47	124	87	121	175
Months of labor per farm.....	48	15.1	18.7	23.1	25.2
Percent land area tillable.....	49	91.4	85.7	73.7	78.5
Percent tillable land in:					
Corn and grain silage.....	50	35.6	32.0	31.9	29.6
Soybeans.....	51	3.0	.6	.6	.6
Small grains.....	52	31.6	24.7	26.3	26.9
Hay and pasture.....	53	29.8	42.4	41.1	39.7
Biennial and perennial legumes.....	54	27.8	38.4	35.3	35.8
Crop yields per acre:					
Corn, bushels.....	55	65.5	60.9	58.2	56.7
Soybeans, bushels.....	56	26.0	27.2	13.2	20.0
Oats, bushels.....	57	50.7	54.7	52.8	53.5
Wheat, bushels.....	58	.....	31.1	27.6	17.8
Feed and grain returns per tillable acre.....	59	\$ 63.74	\$ 63.48	\$ 58.90	\$ 57.32
Feed fed per tillable acre.....	60	66.58	64.53	59.31	49.03

TABLE 15.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE CASH GRAIN AREA, 1950

	Under 180 acres		180-259 acres		260-339 acres		340-499 acres	Over 500 acres
	Grain farms	Hog farms	Grain farms	Hog farms	Grain farms	Hog farms	Grain farms	Grain farms
1	47	32	87	25	78	13	87	40
2	149	146	223	221	307	298	404	689
3	2.5	2.5	2.2	2.4	2.4	2.9	2.3	2.5
4	\$ 394	\$ 321	\$ 501	\$ 378	\$ 611	\$ 708	\$ 978	\$ 1 971
5	582	1 033	722	909	827	986	1 131	2 023
6	2 349	2 560	2 908	3 445	3 664	4 183	4 849	7 380
7	1 940	2 299	2 460	3 213	3 168	3 439	3 930	5 934
8	529	562	739	757	1 001	939	1 272	2 001
9	176	412	224	414	245	611	328	410
10	1 781	2 099	2 591	2 920	3 364	3 387	4 466	7 160
11	(7 751)	(9 286)	(10 145)	(12 036)	(12 880)	(14 253)	(16 954)	(26 879)
12	\$ 30	\$ 131	\$ 33	\$ 117	\$ 70	\$ 171	\$ 73	\$ 136
13	370	674	517	567	476	730	440	410
14	337	744	491	425	588	819	445	654
15	600	575	878	2 236	1 196	1 864	2 155	3 756
16	1 192	6 167	1 520	6 802	2 012	8 151	2 744	3 667
17	(2 529)	(8 291)	(3 439)	(10 147)	(4 342)	(11 735)	(5 857)	(8 623)
18	10 280	17 577	13 584	22 183	17 222	25 988	22 811	35 502
19	68.99	120.39	60.91	100.38	56.10	87.21	56.46	51.53
20	\$ 373	\$ 173	\$ 197	\$ 212	\$ 263	\$ 326	\$ 381	\$ 442
21	111	111	118	154	157	274	203	403
22	9 136	9 016	14 279	12 995	18 395	17 045	24 981	40 187
23	\$ 60	\$ 261	\$ 51	\$ 224	\$ 107	\$ 296	\$ 113	\$ 347
24	446	853	638	657	553	852	519	452
25	551	1 203	917	875	1 005	1 448	778	1 226
26	1 059	1 089	1 589	4 102	2 116	3 456	3 731	6 192
27	1 831	8 798	2 347	10 528	3 064	12 957	4 314	6 021
28	(3 947)	(12 204)	(5 542)	(16 386)	(6 845)	(19 009)	(9 455)	(14 238)
29	13 567	21 504	20 136	29 747	25 660	36 654	35 020	55 270
30	\$ 3 287	\$ 3 927	\$ 6 552	\$ 7 564	\$ 8 438	\$10 666	\$12 209	\$19 768
31	42	42	65	63	66	75	72	74
32	\$ 4 673	\$ 5 016	\$ 7 608	\$ 5 357	\$ 8 841	\$10 112	\$12 948	\$19 836
33	1 968	2 703	3 193	6 766	4 611	5 522	5 531	9 084
34	268	364	314	410	310	369	346	394
35	1 841	2 058	1 972	2 050	1 960	1 950	2 151	2 386
36	\$ 5 068	\$ 6 025	\$ 9 143	\$10 483	\$11 802	\$14 053	\$16 674	\$26 928
37	34.01	41.27	41.00	47.43	38.44	47.16	41.27	39.08
38	14.23	14.36	17.65	17.95	17.54	20.74	18.67	18.80
39	\$ 239	\$ 288	\$ 232	\$ 265	\$ 219	\$ 228	\$ 221	\$ 208
40	\$ 100	\$ 241	\$ 489	\$ 1 164	\$ 1 209	\$ 1 489	\$ 1 778	\$ 3 547
41	16.17	21.09	13.37	19.59	12.98	15.78	11.98	11.30
42	291	350	341	408	376	391	495	645
43	440	493	614	731	786	1 051	1 197	1 881
44	425	429	585	625	748	873	1 092	1 771
45	779	884	918	1 193	1 216	1 290	1 538	2 479
46	19.58	23.49	15.80	21.01	15.02	19.19	14.78	14.06
47	120	109	184	164	244	218	328	525
48	12.7	15.2	16.5	20.5	21.2	23.5	24.8	35.7
49	92.1	92.5	93.8	90.4	91.6	89.6	92.2	87.7
50	35.7	41.1	34.9	39.0	34.9	36.0	34.2	32.3
51	20.0	5.4	22.5	9.3	21.9	15.0	23.3	23.6
52	24.7	24.1	24.8	23.9	23.4	23.6	24.6	25.2
53	18.7	28.8	17.6	27.4	19.2	23.0	17.7	18.2
54	15.1	25.1	14.3	23.5	15.7	21.0	15.0	14.7
55	60.9	63.7	61.4	61.8	60.3	58.1	58.8	59.8
56	29.4	25.1	29.3	29.6	28.9	30.3	27.9	29.0
57	46.2	47.8	45.2	45.4	44.6	43.6	43.4	45.6
58	24.9	27.6	25.8	...	27.2	27.4	26.1	28.4
59	\$ 66.27	\$ 66.76	\$ 67.93	\$ 64.76	\$ 65.15	\$ 63.51	\$ 66.81	\$ 66.19
60	18.42	61.57	16.42	50.89	15.46	43.98	15.74	14.28

TABLE 16.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE LIVESTOCK AND GRAIN AREA, 1950

Items	Under 180 acres			
	Grain farms	Hog farms	Dairy farms	Mixed livestock
Number of farms.....	1	16	82	21
Average size of farm.....	2	153	145	139
Soil rating on improved land.....	3	2.4	2.9	3.2
Inputs per farm:				
Soil improvements.....	4	\$ 216	\$ 262	\$ 231
Buildings and fences.....	5	734	824	697
Machinery and power.....	6	2 636	2 664	2 549
Labor.....	7	2 106	2 415	2 370
Taxes.....	8	512	477	463
Miscellaneous.....	9	208	431	319
Capital charge.....	10	1 950	1 925	1 636
Total non-feed input.....	11	(8 362)	(8 998)	(8 465)
Feed fed to:				
Sheep.....	12	\$ 79	\$ 59	\$ 65
Poultry.....	13	341	493	529
Dairy cattle.....	14	345	692	3 341
Other cattle.....	15	371	1 646	2 272
Hogs.....	16	1 912	6 369	2 241
Total feed fed.....	17	(3 048)	(9 259)	(6 448)
Total farm inputs.....	18	11 410	18 257	14 913
Total inputs per acre.....	19	74.58	125.91	107.29
Returns per farm:				
Labor and machinery.....	20	\$ 744	\$ 290	\$ 130
AAA, buildings and miscellaneous.....	21	95	100	75
Feed and grain returns.....	22	9 872	8 584	7 777
Returns from:				
Sheep.....	23	\$ 198	\$ 110	\$ 93
Poultry.....	24	390	581	595
Dairy cattle.....	25	782	1 285	4 692
Other cattle.....	26	691	2 862	449
Hogs.....	27	3 290	9 650	3 198
All livestock.....	28	(5 351)	(14 488)	(9 027)
Total farm returns.....	29	16 062	23 462	17 009
Net returns per farm.....	30	\$ 4 652	\$ 5 205	\$ 2 096
Net returns per \$100 non-feed input.....	31	56	58	25
Cash balance per farm.....	32	\$ 5 573	\$ 3 778	\$ 3 142
Inventory increase.....	33	2 809	4 978	2 360
Farm products consumed.....	34	231	348	337
Less unpaid labor.....	35	2 011	1 973	2 110
Net farm earnings.....	36	\$ 6 602	\$ 7 131	\$ 3 729
Net earnings per acre.....	37	43.15	49.18	26.83
Rate earned on investment, percent.....	38	16.93	18.52	11.40
Total investment per acre.....	39	\$ 255	\$ 266	\$ 236
Selected farm operating costs:				
Hired labor charge.....	40	\$ 95	\$ 442	\$ 461
Labor cost per crop acre.....	41	17.12	23.00	26.22
Machinery hire.....	42	453	329	425
Machinery repairs and maintenance.....	43	559	582	461
Gasoline, fuel and oil.....	44	428	452	399
Machinery depreciation.....	45	811	844	721
Power and machinery cost per crop acre.....	46	21.43	25.37	26.01
Crop acres per farm.....	47	123	105	98
Months of labor per farm.....	48	13.4	16.1	16.7
Percent land area tillable.....	49	94.6	88.3	85.8
Percent tillable land in:				
Corn and grain silage.....	50	40.3	41.2	38.0
Soybeans.....	51	9.7	2.3	2.2
Small grains.....	52	26.2	25.2	25.3
Hay and pasture.....	53	23.8	31.3	34.4
Biennial and perennial legumes.....	54	22.3	28.7	31.2
Crop yields per acre:				
Corn, bushels.....	55	60.8	66.7	58.9
Soybeans, bushels.....	56	34.4	28.0	28.8
Oats, bushels.....	57	48.7	52.3	55.2
Wheat, bushels.....	58	40.0	49.9	36.0
Feed and grain returns per tillable acre.....	59	\$ 68.22	\$ 66.61	\$ 64.49
Feed fed per tillable acre.....	60	21.06	72.36	54.22

TABLE 16.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE LIVESTOCK AND GRAIN AREA, 1950 (CONTINUED)

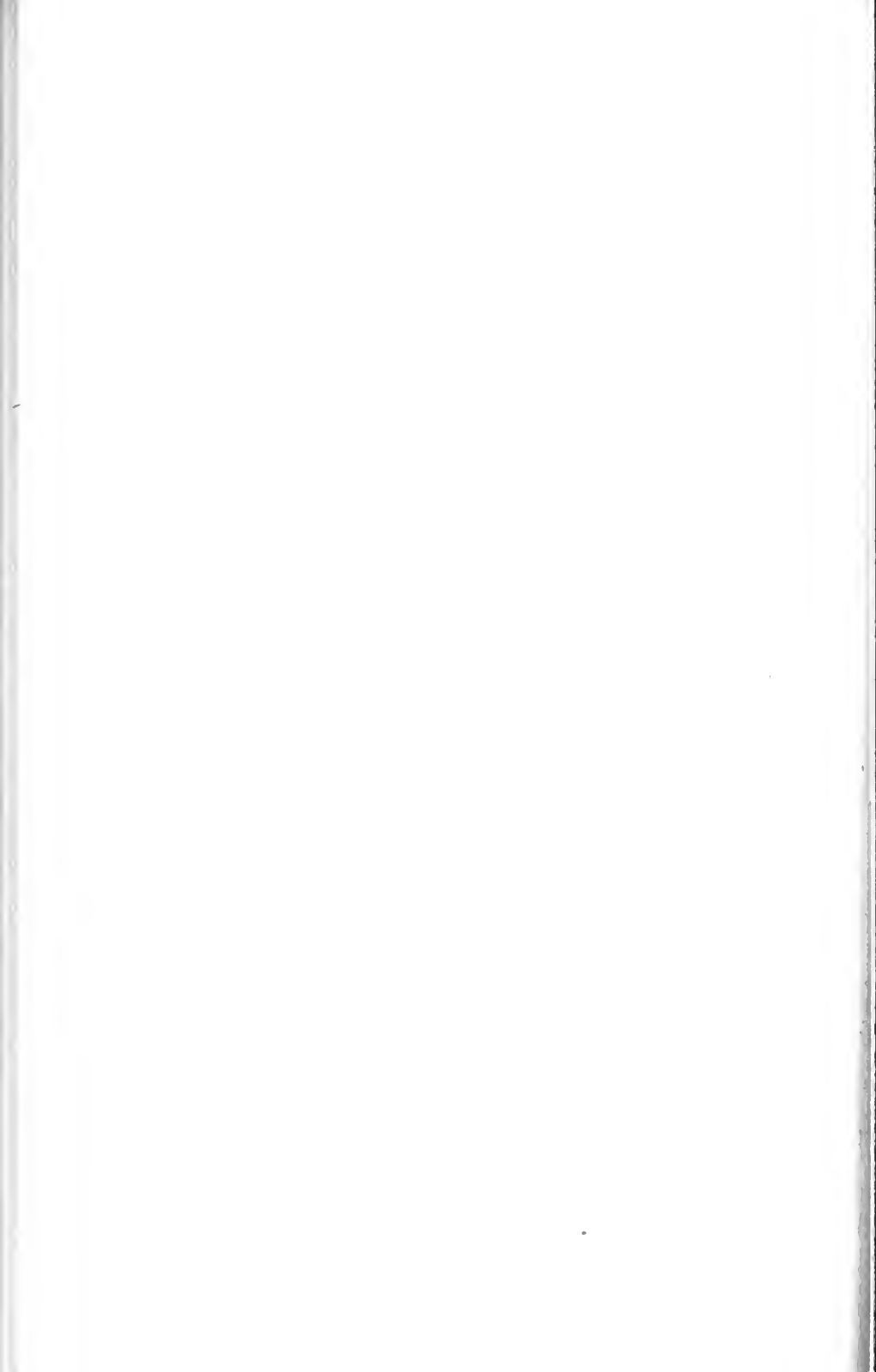
	180 to 259 acres				260 to 399 acres			
	Grain farms	Hog farms	Beef cattle farms	Mixed livestock	Grain farms	Hog farms	Beef cattle farms	Mixed livestock
1	22	78	23	14	22	47	12	17
2	224	222	222	216	301	304	309	298
3	2.3	2.6	2.8	3.3	2.3	2.8	2.6	2.8
4	\$ 373	\$ 377	\$ 472	\$ 361	\$ 569	\$ 502	\$ 441	\$ 433
5	863	987	1 488	1 141	901	1 339	1 268	1 468
6	3 028	3 489	3 844	3 195	3 537	4 296	3 957	4 243
7	2 693	3 057	3 478	2 891	3 541	3 576	4 133	3 677
8	603	682	705	662	880	934	984	894
9	225	526	432	331	308	592	398	453
10	2 479	2 838	3 467	2 527	3 521	3 545	4 215	3 823
11	(10 264)	(11 956)	(13 886)	(11 108)	(13 257)	(14 784)	(15 396)	(14 991)
12	\$ 45	\$ 40	\$ 46	\$ 205	\$ 36	\$ 184	\$ 38	\$ 115
13	186	430	473	658	384	432	320	926
14	408	621	274	1 300	622	594	317	870
15	874	3 156	9 936	3 937	1 756	3 421	12 749	6 035
16	2 407	8 816	4 900	40 77	2 639	10 452	5 406	6 033
17	(3 920)	(13 063)	(15 629)	(10 177)	(5 437)	(15 083)	(18 830)	(13 979)
18	14 184	25 019	29 515	21 285	18 694	29 867	34 226	28 970
19	63.32	112.70	132.95	98.54	62.11	98.25	110.76	97.21
20	\$ 275	\$ 266	\$ 262	\$ 415	\$ 345	\$ 284	\$ 194	\$ 220
21	131	144	137	84	177	195	143	170
22	13 438	12 825	14 716	12 181	19 286	16 651	17 503	16 108
23	\$ 92	\$ 81	\$ 97	\$ 288	\$ 76	\$ 360	\$ 41	\$ 176
24	219	496	525	731	446	516	365	987
25	605	1 124	1 455	2 391	1 066	1 118	344	1 420
26	1 610	5 536	16 595	7 040	3 031	5 955	20 924	9 725
27	3 866	13 246	7 544	5 802	4 399	15 438	8 382	7 704
28	(6 392)	(20 483)	(26 216)	(16 252)	(9 018)	(23 387)	(30 056)	(20 012)
29	20 236	33 718	41 331	28 932	28 826	40 517	47 896	36 510
30	\$ 6 052	\$ 8 699	\$11 816	\$ 7 647	\$10 132	\$10 650	\$13 670	\$ 7 540
31	59	73	85	69	76	72	89	50
32	\$ 4 314	\$ 6 597	\$10 880	\$ 4 460	\$10 275	\$ 5 630	\$13 507	\$ 6 236
33	5 754	6 686	6 005	7 449	5 225	10 288	6 094	6 903
34	246	429	420	333	410	408	460	491
35	1 782	2 174	2 022	2 068	2 258	2 131	2 176	2 268
36	\$ 8 532	\$11 538	\$15 283	\$10 174	\$13 652	\$14 195	\$17 885	\$11 362
37	38.09	51.97	68.84	47.10	45.36	46.69	57.88	38.13
38	17.21	20.32	22.04	20.13	19.39	20.02	21.22	14.86
39	\$ 221	\$ 256	\$ 312	\$ 234	\$ 234	\$ 233	\$ 273	\$ 257
40	\$ 910	\$ 883	\$ 1 456	\$ 823	\$ 1 283	\$ 1 446	\$ 1 958	\$ 1 409
41	16.03	19.98	20.95	19.14	15.13	17.11	21.30	18.20
42	324	345	481	340	346	354	264	395
43	674	812	802	756	752	1 066	890	1 010
44	625	645	661	557	750	822	858	833
45	983	1 207	1 228	951	1 115	1 475	1 361	1 488
46	18.02	22.80	23.16	21.16	15.12	20.56	20.40	21.00
47	168	153	166	151	234	209	194	202
48	16.7	20.1	22.3	18.5	22.6	23.8	26.5	24.6
49	89.9	84.6	89.0	84.9	91.1	82.9	83.1	83.8
50	39.0	41.5	41.5	37.9	37.8	40.4	37.6	40.2
51	8.0	2.7	7	4.2	10.1	4.1	1.2	2.1
52	27.7	27.0	25.5	25.6	28.8	26.6	24.8	25.7
53	24.7	28.6	32.2	32.3	22.4	28.9	36.2	31.9
54	23.5	25.8	30.3	29.0	18.6	26.0	31.6	29.5
55	63.0	66.5	71.7	67.6	66.9	66.3	70.7	64.6
56	29.7	34.7	28.5	29.8	29.3	30.2	28.4	27.8
57	51.0	51.2	59.1	52.8	51.1	51.3	62.5	53.9
58	37.1	31.3	44.8	...	32.3	32.6	...	35.6
59	\$ 66.42	\$ 67.39	\$ 73.80	\$ 65.83	\$ 70.07	\$ 65.19	\$ 66.87	\$ 64.00
60	19.45	69.60	79.00	55.54	19.82	59.89	73.34	56.05

TABLE 16.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE LIVESTOCK AND GRAIN AREA, 1950 (CONCLUDED)

Items		340 to 499 acres			Over 500 acres
		Grain farms	Hog farms	Beef cattle farms	Hog farms
Number of farms	1	18	41	29	19
Average size of farm	2	407	415	421	676
Soil rating on improved land	3	2.8	2.7	2.7	3.5
Inputs per farm:					
Soil improvements	4	\$ 551	\$ 918	\$ 764	\$ 1 302
Buildings and fences	5	1 198	1 568	2 058	3 705
Machinery and power	6	4 641	5 614	5 537	8 475
Labor	7	3 886	4 903	5 212	7 654
Taxes	8	1 071	1 153	1 153	1 450
Miscellaneous	9	340	727	696	1 040
Capital charge	10	4 091	4 636	5 668	6 848
Total non-feed input	11	(15 778)	(19 519)	(21 088)	(30 474)
Feed fed to:					
Sheep	12	\$ 104	\$ 152	\$ 194	\$ 165
Poultry	13	399	316	249	320
Dairy cattle	14	354	602	444	310
Other cattle	15	2 802	5 776	17 785	7 782
Hogs	16	4 736	14 282	6 963	20 064
Total feed fed	17	(8 395)	(21 128)	(25 635)	(28 641)
Total farm inputs	18	24 173	40 647	46 723	59 115
Total inputs per acre	19	59.39	97.94	110.98	87.45
Returns per farm:					
Labor and machinery	20	199	\$ 517	\$ 373	\$ 466
AAA, buildings and miscellaneous	21	211	239	208	342
Feed and grain returns	22	23 867	22 406	23 486	33 445
Returns from:					
Sheep	23	\$ 244	\$ 374	\$ 308	\$ 241
Poultry	24	455	352	239	379
Dairy cattle	25	630	992	716	394
Other cattle	26	5 161	10 022	29 669	12 588
Hogs	27	7 945	20 996	10 989	31 086
All livestock	28	(14 435)	(32 736)	(41 921)	(44 688)
Total farm returns	29	38 712	55 898	65 988	78 941
Net returns per farm	30	\$14 539	\$15 251	\$19 265	\$19 826
Net returns per \$100 non-feed input	31	92	78	91	65
Cash balance per farm	32	\$14 967	\$ 7 310	\$ 8 186	\$ 249
Inventory increase	33	5 483	14 550	18 541	28 286
Farm products consumed	34	488	444	443	457
Less unpaid labor	35	2 308	2 417	2 237	2 318
Net farm earnings	36	\$18 630	\$19 887	\$24 933	\$26 674
Net earnings per acre	37	45.77	47.92	59.22	39.46
Rate earned on investment, percent	38	22.77	21.45	22.00	19.47
Total investment per acre	39	\$ 201	\$ 224	\$ 269	\$ 203
Selected farm operating costs:					
Hired labor charge	40	\$ 1 578	\$ 2 487	\$ 2 975	\$ 5 337
Labor cost per crop acre	41	13.00	17.64	19.52	18.44
Machinery hire	42	527	421	449	861
Machinery repairs and maintenance	43	1 028	1 546	1 321	2 392
Gasoline, fuel and oil	44	1 054	1 059	1 088	1 811
Machinery depreciation	45	1 566	1 869	2 094	2 603
Power and machinery cost per crop acre	46	15.52	20.19	20.74	20.42
Crop acres per farm	47	299	278	267	415
Months of labor per farm	48	25.3	31.4	32.6	43.2
Percent of land area tillable	49	82.7	81.8	77.4	72.8
Percent tillable land in:					
Corn and grain silage	50	36.2	38.5	40.2	38.6
Soybeans	51	16.2	5.8	3.9	8.0
Small grains	52	28.4	26.9	22.8	26.3
Hay and pasture	53	18.5	28.5	33.1	26.8
Biennial and perennial legumes	54	17.1	24.1	29.6	23.9
Crop yields per acre:					
Corn, bushels	55	61.5	67.2	68.2	61.8
Soybeans, bushels	56	31.0	29.1	30.6	24.5
Oats, bushels	57	49.9	52.3	55.1	53.8
Wheat, bushels	58	33.8	34.4	50.1	35.4
Feed and grain returns per tillable acre	59	\$ 70.06	\$ 65.21	\$ 70.53	\$ 66.41
Feed fed per tillable acre	60	24.93	62.28	78.76	58.20

TABLE 17.—SUMMARY OF BUSINESS RECORDS ON SELECTED SIZE AND TYPE GROUPS OF FARMS IN THE GENERAL FARMING AREA, 1950

	Under 180 acres		180 to 259 acres		260 to 339 acres		340 to 499 acres	
	Grain farms	Hog farms	Grain farms	Hog farms	Grain farms	Hog farms	Grain farms	Hog farms
1	8	22	13	33	22	15	19	18
2	151	146	225	219	292	289	423	412
3	4.3	4.5	3.7	4.5	4.3	4.2	3.8	5.1
4	\$ 437	\$ 376	\$ 417	\$ 430	\$ 582	\$ 526	\$ 974	\$ 865
5	547	623	611	799	532	769	1 220	1 243
6	2 554	2 659	3 263	3 119	3 484	3 310	4 808	4 928
7	2 298	2 470	2 498	2 801	2 686	3 299	4 068	4 166
8	382	406	603	562	690	623	1 084	868
9	166	417	224	355	335	486	376	535
10	1 312	1 414	2 103	1 855	2 281	2 268	3 822	3 033
11	(7 696)	(8 365)	(9 719)	(9 921)	(10 590)	(11 281)	(16 352)	(15 638)
12	\$ 81	\$ 77	\$ 31	\$ 26	\$ 15	\$ 43	\$ 68	\$ 89
13	133	469	425	457	272	398	262	634
14	7	274	259	712	420	497	202	271
15	62	751	783	1 273	1 179	1 440	2 977	2 167
16	1 237	6 783	2 497	6 405	2 178	7 127	5 754	9 090
17	(1 520)	(8 354)	(3 995)	(8 873)	(4 064)	(9 505)	(9 263)	(12 251)
18	9 216	16 719	13 714	18 794	14 654	20 786	25 615	27 889
19	61.03	114.51	60.95	85.82	50.18	71.92	60.56	67.69
20	\$ 202	\$ 425	\$ 359	\$ 450	\$ 340	\$ 264	\$ 336	\$ 224
21	108	104	208	181	106	179	184	226
22	8 324	6 521	11 611	10 384	14 313	11 820	21 550	15 738
23	\$ 146	\$ 148	\$ 38	\$ 48	\$ 29	\$ 95	\$ 146	\$ 63
24	172	590	510	559	277	462	356	574
25	17	488	455	1 216	716	1 126	364	622
26	188	1 188	1 499	2 239	1 801	2 448	5 582	3 977
27	1 905	10 691	3 719	9 876	3 641	12 081	9 636	13 502
28	(2 428)	(13 105)	(6 221)	(13 938)	(6 464)	(16 212)	(16 084)	(18 738)
29	11 062	20 155	18 399	24 953	21 223	28 475	38 154	34 926
30	\$ 1 846	\$ 3 436	\$ 4 685	\$ 6 159	\$ 6 569	\$ 7 689	\$12 539	\$ 7 037
31	24	41	48	62	62	68	77	45
32	\$ 3 749	\$ 2 747	\$ 5 853	\$ 5 532	\$ 6 509	\$ 5 857	\$12 475	\$ 4 996
33	1 268	3 772	2 645	4 238	4 000	6 016	6 196	7 201
34	108	336	413	441	373	504	405	473
35	1 969	2 005	2 122	2 197	2 032	2 419	2 715	2 601
36	\$ 3 156	\$ 4 850	\$ 6 789	\$ 8 014	\$ 8 850	\$ 9 958	\$16 361	\$10 069
37	20.90	33.22	30.17	36.59	30.31	34.46	38.68	24.44
38	12.04	17.15	16.14	21.60	19.40	21.96	21.40	16.61
39	\$ 174	\$ 193	\$ 187	\$ 170	\$ 156	\$ 157	\$ 181	\$ 147
40	\$ 330	\$ 466	\$ 375	\$ 603	\$ 655	\$ 879	\$ 1 352	\$ 1 566
41	19.47	27.14	14.19	21.06	12.44	20.24	13.38	16.87
42	240	279	257	364	290	380	446	388
43	524	658	828	681	851	778	1 011	1 297
44	456	445	653	524	710	630	1 003	1 016
45	871	831	1 161	1 062	1 139	988	1 854	1 623
46	21.64	29.22	18.54	23.45	16.13	20.31	15.82	19.95
47	118	91	176	133	216	163	304	247
48	15.1	14.9	16.5	19.0	17.7	22.7	28.1	28.5
49	90.0	78.7	90.6	77.9	86.0	73.6	86.0	72.2
50	31.9	33.9	26.2	28.6	29.8	32.3	27.7	33.0
51	29.0	7.2	26.6	11.7	20.7	12.8	21.7	16.5
52	23.6	27.3	29.5	24.4	26.9	22.3	27.1	25.3
53	12.8	31.5	15.8	34.2	20.2	29.9	22.8	22.8
54	11.0	23.3	10.6	30.2	16.8	23.5	19.1	18.2
55	58.9	59.8	55.6	66.7	55.9	60.0	59.4	51.8
56	27.8	26.9	27.5	26.7	25.9	25.3	29.3	26.6
57	42.0	37.5	46.7	43.6	44.2	45.0	43.5	32.0
58	22.3	26.6	26.9	27.2	29.0	29.2	28.4	24.0
59	\$ 61.12	\$ 55.16	\$ 56.66	\$ 59.52	\$ 56.50	\$ 54.30	\$ 58.64	\$ 51.68
60	11.20	72.47	19.63	52.07	16.17	44.75	25.46	41.18



Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ News series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. ⁹ Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. ¹⁰ Federal Reserve Bulletin of Federal Reserve Board. ¹¹ Preliminary estimate. ¹² Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹³ Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.



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TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production ¹
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period.....	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-
1935.....	99	101	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	302	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	248	275	207	383	389	189	303	351	192
1949.....	192	218	217	200	352	362	181	304	325	176
1950.....	200	224	228	204	350	360	176	330	372	200
1950 May.....	193	217	227	202	268	327	162	319	348	195
June.....	195	218	228	203	275	285	140	326	363	199
July.....	202	232	240	204	353	393	193	328	368	196
Aug.....	206	234	240	205	383	344	167	335	394	209
Sept.....	210	237	243	208	437	339	163	342	403	211
Oct.....	210	234	235	208	538	549	264	344	416	216
Nov.....	213	242	240	210	484	429	204	346	415	215
Dec.....	218	247	252	212	402	371	175	359	426	218
1951 Jan.....	223	256	261	217	378	393	181	356	424	221
Feb.....	228	267	277	220	281	307	140	358	430	221
Mar.....	228	268	276	224	303	376	168	362	435	222
Apr.....	228	266	278	226	313	395	175	366	433	223
May.....	227	263	274	226	319	390	173	368	428	223
June.....	226	261	270	225	323	...	...	370	436	222

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			Aug. 1950	Current months, 1951		
	1935-39	1949	1950		June	July	Aug.
Corn, bu.....	\$.66	\$1.17	\$1.35	\$1.42	\$1.64	\$1.65	\$1.67
Oats, bu.....	.31	.64	.76	.70	.82	.75	.76
Wheat, bu.....	.86	1.95	2.02	2.03	2.17	2.16	2.19
Barley, bu.....	.62	1.07	1.20	1.28	1.33	1.25	1.30
Soybeans, bu.....	.90	2.19	2.49	2.42	3.02	2.92	2.77
Hogs, cwt.....	8.52	18.58	18.19	21.00	21.20	21.00	21.20
Beef cattle, cwt.....	7.88	21.19	24.54	26.00	31.20	31.20	31.30
Lambs, cwt.....	8.36	23.43	25.06	24.90	31.60	29.90	29.30
Milk cows, head.....	58.00	198.33	216.67	225.00	265.00	270.00	270.00
Veal calves, cwt.....	8.66	25.05	28.01	28.70	34.10	33.50	33.10
Sheep, cwt.....	3.58	8.70	10.52	9.00	16.50	15.40	14.00
Butterfat, lb.....	.27	.58	.58	.56	.66	.64	.64
Milk, cwt.....	1.68	3.42	3.46	3.30	3.75	3.95	4.00
Eggs, doz.....	.19	.40	.31	.30	.39	.39	.40
Chickens, lb.....	.15	.27	.23	.26	.27	.27	.26
Wool, lb.....	.25	.42	.50	.54	.96	.83	.69
Apples, bu.....	1.08	2.38	2.24	2.30	1.95	1.95	2.00
Hay, ton ¹³	9.39	22.68	20.77	19.40	19.90	19.60	19.40

¹³ For sources of data in tables see preceding page.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. H. P. Rusk, Director. Acts approved by Congress May 8 and June 30, 1914

ILLINOIS FARM ECONOMICS

EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS

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Articles in This Issue

	PAGE
Farm Policy Problems in This Era of Tensions — H. C. M. CASE....	1229
Marketing Illinois Concentrated Milk in Florida — R. W. BARTLETT	1236
Consumer Acceptance of Concentrated Milk — G. C. KLEIMAN.....	1245
Quality as a Livestock Marketing Factor — W. J. WILLS.....	1246

FARM POLICY PROBLEMS IN THIS ERA OF TENSION¹

We talk freely of the American way of life, we attempt to sell democracy to other nations of the world, and we complain about many phases of our own national and local life. All is not consistent. There are many things in our national life that we would not want to sell to other nations. We may even be inconsistent in the things which we tolerate at home and those which we try to hold before others as part of our way of living. Where do the difficulties rest? Does our national government need the amount of debunking it gets? Are matters as bad as some people would have us believe? Where does the responsibility rest in a country where, at least by inference, the people govern? Have our citizens degenerated from a colonial town meeting type of responsibility to a type of citizen who says little about government matters but who gripes about those things in government which he does not like? Are we giving forethought to the laws we want, or do we wait until laws are passed, and then without doing much else proclaim to the world what is wrong with them?

I should like each of you to ask yourself this question: "What is it that has made this country strong?" Different ones will give different answers, but I am inclined to think that too many people have forgotten some of the colonial experience with the town meeting type of approach to current problems.

How much thought have you given to just what is the function of

¹ Discussion presented before the American Country Life Association, September 20, 1951, at Urbana, Illinois.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

government? Have you thought about whether or not our ideas of government and what it should do change over a period of time? One of our staff recently made the statement that in his opinion there were about seven stages in the functions which governments have fulfilled.¹ The first function is physical protection. It dealt with keeping people from stealing and murdering each other. The second has to do with foreign relations. It had to do with the relationships between colonies and relationship between our states. Now we are more concerned with the relations between nations. The third function of government is the protection of freedom and liberty. This was represented in the Magna Carta and in our own Bill of Rights. The fourth function is that of economic and social protection. We have examples in the Sherman Anti-Trust Act and the extension of suffrage to women. Turning to more modern times, the fifth function assumed by government is that of economic and social planning. This is a development of the current century, and we are still arguing about it. The sixth stage we might call the stage of economic and social regulation. Price controls are a good example. While we do not like to think about it, perhaps there is the seventh stage which has been employed in some countries but which is repugnant to our very ideals of democracy; that of thought control. Thought control may be a step that logically follows economic and social controls.

Thought control may be necessary if we are prepared to accept the controls which may be enforced to prevent rebellion against the type of controls which have been experienced under dictatorships. Or, we might call it the communistic stage where the government not only has control but you as an individual must like that control. In this progression of the function of government one might look upon it as a geometric progress; that is, one law begets another law or a revision of the law. As controls over individuals are increased unpredictable problems are created which require still more laws. When we begin to advance along these lines, law may depart from its true function as it begins to single out classes and groups for special consideration.

We all agree that our government should be big enough to keep our citizens from injuring each other and to protect our citizens from other nations. But it is your individual problem and responsibility to help determine just how far you want law to go in directing the kind of an environment in which you wish to live.

Perhaps another view of legislation is to say that until about 1925 most of our federal legislation was designed to help farm people help

¹H. W. Hannah, Dept. of Agr. Eco., speaking before Agricultural Policy Conference, University of Illinois, March 20, 1951.

themselves. Our agricultural experiment stations, our land-grant colleges, our agricultural extension service, our Smith-Hughes law for secondary education were established; the farm credit act and the Sherman Anti-Trust Act were passed. If we were to examine these laws, I believe we would conclude that this group of laws, which carried through the first quarter of this century, benefited the general public as much as the farmers. These acts provided the basis for improved techniques and economics in production and the public gained as much from lower cost of food production as did the farmer through improved earnings.

Just as an example, one might point out that much of our research at public expense has prevented the ravages of insects and diseases pertaining to crops and domesticated animals and in many ways has increased the production per farm worker so that our standard of living has been greatly helped through legislation. There was little in the legislation during that period, however, that tended in any way to restrict the personal life of the individual farmer. Legislation afforded him opportunities which, if he made the most of them, helped to make him independent and helped to place a higher level of living within reach of his family.

Following World War I, there was a definite demand for new agricultural legislation. The demand arose for equality of agriculture which had a public appeal but a fundamental which must be recognized is that when legislation to bring equality between classes increases, the control over individuals and groups must also increase.

As we look back over the past, we may feel that we have done considerable fumbling. We had the Federal Farm Board under the Marketing Act which attempted, for example, to control the price of wheat, cotton, and other major products, or at least to raise the price of these products by holding them off the market. Since there was no control over production, the action which the Federal Farm Board was able to take was inadequate to control the situation for even a few major commodities.

I use this merely as one example to show a change in the intent of legislation. This is no place to discuss merits of any particular attempts. Personally, I feel that we need to give considerable thought to the whole matter of legislation from the standpoint of its intents, and more especially, its consequences. I have had just a little experience through spending about six months with the Senate Agricultural and Forestry Committee when I watched from the inside the process of drafting a new law. We can depend on it that members of Congress wish to represent their constituency, and they wish to know what their constituents think. If members of Congress go far contrary to the thinking of their constituents, they lose their power completely because they will be replaced

by others at the next election. We need to give thought to how individuals can give enlightened interest and effective action in the formation of laws. In this assignment, it was my good fortune to attend hearings on what farm people wanted by way of legislation held by the Senate committee on agriculture and forestry. These hearings were held from Massachusetts to Colorado to South Carolina. Most of the witnesses appearing before the committee were farm people. A thing which impressed me was that you could soon tell to what farm organization a witness belonged if you knew the policies that had been espoused by the various farm organizations. I was further impressed with the fact that when questions were asked these witnesses concerning why they were asking for certain things, they were not well prepared to answer the questions. They accepted the policies laid down by their organizations, but they could not defend them. This situation points to a contribution I should like to make to this conference.

I believe the original town meetings in this country were responsible for a great deal more of the formulation of early national policies and principles than most of us recognize. The formulation of our Constitution itself, the Bill of Rights, and the endless debates concerning them are typical of the town meeting approach. If my understanding of history is right, questions were discussed until those engaged in the debate were thoroughly familiar with the pros and cons of the implications raised in the issue under discussion. From the use of almost endless debates were evolved the principles upon which our democracy was established. At this point I was interested in noting that after the Taft-Hartley bill became law a poll taken among working people showed they were opposed to the act, but when they were questioned on the separate issues involved in the act but which were not identified, the majority favored each separate point. Their organizations had developed opposition to the act without educating them concerning the basic issues involved. This is a danger in pressure groups that decide issues for their followers without educating them regarding the issues. The point I wish to make is that I believe we need a revival of the town meeting approach to the discussion of debatable problems with an honest effort made to present all aspects of problems affecting human existence and welfare.

We need town meeting type of discussions cutting across all special interest groups in the community, rather than discussions on the trade or professional association basis. How else can the individual be prepared to vote intelligently for or against an issue? How else can we attain new legislation that has its origin at the grass roots? Yet, how many people will attend a local discussion of some governmental policy or issue when

there are stock car races or movies they can attend? Currently we have examples of hundreds of people in a county being invited to the Family Farm Policy Review meeting with but about 60 attending, and half that number expressing themselves by answering part of the questions. Part of the failure to answer the questions is simply because they do not have an opinion concerning the subject involved.

Now we come to the question "What can we as individuals or organizations do about this matter?" I cannot answer it for you, of course. I should like to try to answer it from the standpoint of our land-grant colleges and agricultural extension service. I will be one of the first to admit that our land-grant institutions have probably failed to accomplish all that they should have along the line of education pertaining to public policy problems. The Smith-Lever Act itself states that one of the obligations of the act is to "the people of the United States not attending or resident in colleges." That quotation from the act clearly indicates that extension teaching pertaining to agriculture reaches beyond farm people. In 1948 the U.S. Department of Agriculture and Association of Land-Grant Colleges and Universities issued a report on "Extension Programs, Policies and Goals." This report stated that many extension workers perhaps avoided policy matters because they involved controversial issues and are less tangible than problems of increasing the yield of crops or livestock. It was pointed out, however, that conclusions must and will be reached pertaining to policy questions and that arriving at the best possible solution to these problems is of basic importance to the farm, the home, and national welfare along the line of American ideals. Extension Service has a responsibility for rendering educational assistance. The report further states that "assistance along these lines should be rendered on the basis of presenting facts and alternative procedures purely in the educational spirit of helpfulness. The course of action to be taken should be left with individuals and groups who will weigh the facts and propose alternative procedures and make decisions in the light of their own interest and in reference to the interest of their fellows." This report was a forerunner of a program which is now fairly well launched and represented by a National Agricultural Policy conference held in September this year (1951) at the University of Illinois attended by extension specialists interested in the field of Agricultural Policy.

Briefly, I should like to tell you about the steps which led up to this conference. It was my good fortune to be one of about 25 people who spent a week two years ago in exploring the field of what we should do along the line of agricultural policy. The report of this committee so impressed the Farm Foundation that they took action. Those of you who do not know it, should know that the Farm Foundation was established

by Alex Legge, who labored hard to make a success of the ill-fated Federal Farm Board. Having no children he left an estate of \$750,000 to establish the Farm Foundation with a broad charter to help improve the economic and social well-being of farm people.

The Farm Foundation under the leadership of Director Frank Peck decided that agricultural policy was a phase of extension activity which they should encourage. The agricultural extension directors approved a plan presented by the Farm Foundation for the appointment of a national committee of four agricultural directors, four agricultural economists, and four extension agricultural economists to consider a program of action. This committee met with Director Peck and his associate, Dr. Joseph Ackerman, and arranged first for a national meeting bringing together about 60 extension workers who were especially concerned with agricultural policy problems. The first three-day conference was devoted to a discussion of the various approaches to the task of enlisting public interest and in the presentation of policy problems. The next step consisted of holding four conferences, one in each of the four major agricultural regions of the country to which were invited extension specialists, administrative officers, and a few county agricultural and home demonstration agents. This did much to enlist added interest in the field of policy discussion. These meetings were held a year ago. This past week a four-day national conference which was attended by 60 workers from 38 states was held here in Illinois; four separate subcommittees prepared and presented material on four major policy problems including international relations, interrelationships of agriculture and other parts of our economy, inflation, and production programs. These presentations provided a basis for studying the technique of presentation and for the discussion of subject matter.

Throughout this development as much attention has been given to methods of approaching problems as to the subject matter which has been discussed. Some of the guiding principles for policy education which the national committee appointed by the Farm Foundation has set up are as follows:

- “1. Work in this field presents special problems. Controversial issues will often be involved. Our task is not to suggest the solution of such issues but to present all of the circumstances to be taken into consideration in reaching decisions thereon.

- “2. It should be recognized that the discussion of public policy issues involves not only scientific facts and principles but ethical choices as well.

- “3. Plans for carrying out this work should be organized in a way to reach all groups affected by public policy programs.

"4. Presentation of the problems involved should strive for objectivity and avoid indoctrination.

"5. Problems should be defined to delineate the issues involved.

"6. The present and future consequences of programs and problems should be analyzed to set forth the issues in clear meaningful terms.

"7. Special emphasis in this field of work should be given to the selection of significant problems and policies and to the timing of the educational work pertaining to them."

I believe that this program has been developed carefully from the standpoint of the responsibilities and opportunities which it affords. Any of the organizations represented here may engage in policy education work with your groups, and many of you will do effective work. An illustration which might be pointed out is the effectiveness of PTA in focusing more attention upon educational matters. It is fortunate that this organization is so well developed when at the present time propaganda against our educational system is being carried on in a number of prominent cities. The PTA has the opportunity to help get the truth before the people if it accepts the responsibility. Farm organizations at the present time are greatly concerned over the Farm Family Policy Review which has jarred many farm people out of their lethargy concerning agricultural legislation. Judging from some preliminary reports concerning the Family Farm Policy Review rural people are doing some original thinking and are ripe for a constructive educational approach to the consideration of farm policy matters. Some organizations will do an excellent job in an unbiased approach to policy problems. However, when any organization undertakes work in a policy field pertaining to the welfare of its own clientele someone is going to criticize it as being biased in its approach. We need to develop the whole program in such a way that no one can criticize us for not presenting the pros and cons of any issue which may be involved. Our task is not to tell people what to think, but to lay the facts before them in such a way that they may make their own decisions with the feeling that they have the best possible information upon which to base their judgments. The organizations represented in this conference have the opportunity of furthering this effort of the Agricultural Extension Service by encouraging your members to participate.

This is a community approach to policy problems and as it is being conducted in a number of states, the discussions are being carried to the public rather than to farm people alone. Furthermore there is the attempt to develop these policy discussions on a firm basis which will bring different points of view into the open in community group discussion. As I consider the problem I like to think of our nation as a group of communities and that our nation itself will be no better than a composite of all our

communities. In closing I should like to put it in this way: we have no greater privilege or responsibility than to help build and maintain the kind of surroundings and influences that we want for our home communities. Our communities are what we make them or let them become if we do nothing. Since our country is a collection of communities our country is what we make it or let it become. Let us not lose our democracy by default.

H. C. M. CASE

MARKETING ILLINOIS CONCENTRATED MILK IN FLORIDA

During the past year, three new products, sterilized whole milk, concentrated milk, and frozen concentrated milk, have appeared on the market. These products reflect the ingenuity and resourcefulness of research workers in an attempt to broaden market outlets for milk.

Sterilized whole milk can be produced where milk prices are low, canned, shipped, and placed in warehouses or held on store shelves without refrigeration. Homogenized under vacuum and sterilized at 285° F. for only eight seconds, the milk retains its true flavor for a long time. Some of it has been found sweet after nine months in the can.¹ Because it keeps well and does not require refrigeration, sterilized milk has a definite advantage over fresh or concentrated milk. Already this product is being made on the west coast and shipped to Alaska and Japan. Its general marketability, however, is limited at present by the extra costs of processing and packaging, plus high transportation costs.²

Frozen concentrated milk can be produced where prices are low, transported in refrigerated trucks or cars, held in cold storage, and sold to consumers in the same way as frozen fruits and vegetables. Presumably, if processed in sufficient volume to permit low unit costs, this product may be used in deep-freeze units and ocean-going vessels, and sold to some foreign countries. Again, its general marketability is limited under present conditions. The ordinary home refrigerator can store only a limited number of items at below-freezing temperatures. Any large supply of frozen concentrate would tend to crowd out the meat and other frozen products commonly kept in the freezing unit of a home refrigerator. Only a very small proportion of families as yet have a deep-freeze unit.

¹ *Reader's Digest*, September 1951, p. 72.

² An executive of a dairy supply company reported (August 1951) that the price of three quarts of sterilized whole milk packaged in a number 10 can at retail stores in Alaska was \$1.85 or 61 $\frac{2}{3}$ cents per quart.

During the past few months concentrated milk¹ has been emerging from the experimental to the commercial stage. It has attained two main outlets: (1) supplementing sales of regular milk and light cream as in the Boston market, and (2) replacing high cost milk as in the Key West Navy base in Florida. The extent to which these established outlets will expand is still problematical. Further expansion in sales of concentrated milk produced in the low-cost areas of the Midwest appears very possible if consumers in general accept the product as they have in Boston and in Key West and if regular commercial outlets can distribute it economically. Acceptance of concentrated milk as a commercial product will hasten the trend toward wider areas of distribution from a central plant through store sales or possibly through weekly home deliveries. The trend toward store distribution already evidenced in Illinois and in other marketing areas has been one factor increasing per-capita sales of milk.² The sale of concentrate may increase them further.

Sales of concentrated milk in the Boston market. Following an intensive advertising campaign in March and April, 1951, sales of concentrated milk in the Boston market increased to about 200,000 quarts, or two percent of the total milk sales.³ Since that time sales of this product have decreased to about one percent.⁴ Boston consumers can buy (August 1951) one quart of concentrate, the equivalent of three quarts of regular, for 61 cents. As 22½ cents is the usual price per quart for regular milk, the customer saves over two cents on a quart.

Boston people have also been using concentrated milk as a substitute for coffee and cereal cream by mixing equal parts of concentrate and water.

Concerning its keeping qualities, an executive of a dairy chain in the Boston market stated: "During the past two months our stores located on highways leading to summer resorts have shown quite an increase in concentrate business. Due mostly to its keeping qualities, it is a natural

¹Two papers were presented on concentrated milk at the Dairy Marketing Conference held at the University of Illinois, February 7, 1951. Copies of these papers were published in mimeographed form and may be obtained upon request. A definition of concentrated milk included in these papers was: "Concentrated milk is whole fresh milk from which most of the water has been removed. When mixed with two parts of cold water, it becomes equal to fresh, pasteurized milk with all the nutritional elements. A few companies are concentrating the product on a four-to-one basis, while at least one company has a two-to-one concentration." Also in *Illinois Farm Economics*, March-April, 1951, pp. 1133-37.

²*Illinois Farm Economics*, October-November, 1950, pp. 1073-1084.

³*Wall Street Journal*, May 17, 1951.

⁴From statement of an executive of a milk producers association in the Boston Milkshed, July 1951.

for summer camps, resorts, or for any boat that is out on the water for a few days."¹

Sale of Illinois concentrated milk in Key West. Between February and June of 1951 the United States Navy purchased several small lots of concentrated milk to determine its usefulness and economy. When officials recognized that the product was highly acceptable and potentially economical, they contracted with Company X located in the Illinois part of the Chicago milkshed to send a truckload of approximately 8,000 quarts of concentrated Grade A milk each week during July to September to the Navy base at Key West, Florida.² The contract provided for the delivery of 72,000 quarts in paper containers and 7,500 gallons to be packaged in five-gallon single service containers. This made a total of 102,000 quarts of concentrated Grade A milk or 306,000 quarts of regular milk after being reconstituted. The contract price for the concentrated milk delivered in quarts at Key West was 51.98 cents per quart. This was subdivided as follows:

	<i>Cents per quart of concentrated milk</i>	<i>Percent of total</i>
Class I price for 3.4 percent		
Grade A milk ^a	29.71	57.2
Dealers' gross handling margin ^b	15.95	30.6
Transportation: Chicago milkshed (Illinois to Key West) ^c	6.32	12.2
	<u>51.98</u>	<u>100.0</u>

For footnotes a, b, and c see bottom of page 1239.

¹ From statement of an executive of a chain of grocery stores in the Boston market in a letter dated August 21, 1951.

² The contract for the sale of concentrated milk from July to September 1951 between Company X and the Navy was made on June 21, 1951, after bids had been submitted to the Navy. Some of the specific items included in this contract were:

- A. Milk fat—not less than 9.85 nor more than 10.5 percent.
- B. Total milk solids not less than 34.9 percent nor more than 37 percent.
- C. Bacterial estimates—not more than 30,000 per gram.
- D. Quarts of milk to be packed in paper containers—20 quarts per case.
- E. Containers—sealed fiber VES shipping containers (five-gallon single service containers).

F. Concentrated product shall be pasteurized by heat to 155° F and held for 30 minutes or to 170° F and held for 15 seconds. Pasteurized concentrated milk shall be homogenized in such a manner as to insure break-up of fat globules to prevent creaming. When reconstituted with two volumes of distilled water, the product shall have a pleasant, fresh, pasteurized milk flavor.

G. Volume contracted:

7,500 gallons.....	\$1.913	\$14,347.50
72,000 quarts.....	\$.5198	37,425.60
Delivery f.o.b. Key West.....		<u>\$51,773.10</u>

H. Minimum quantity to be approximately 5,000 quarts and 500 gallons bulk.

I. Product to be loaded and delivered at approximately 40° F.

J. Destination inspection included in terms of contract.

Problems of shipment. When the first few loads of concentrated milk were shipped from Illinois to Key West, drivers found difficulty in keeping the temperature of the milk at 40° throughout the truck. Tests showed that although the temperature on the sides, front, and rear did not rise above 40°, the temperature of the cartons located on the floor went to 46°. The six-degree rise was caused by the intense heat ranging from 85° to 115° reflected from the road. A one-inch insulation on the bottom of the truck was not enough to prevent heating but when the cartons were separated from the floor by a four-inch air space, the problem was solved. This five- or six-inch space around the sides and top of the truck permitted cold air to circulate to all parts of the truck, maintaining the milk at 40° or below. Four tests of temperature were made enroute on each trip.

During the first seven trips, leakers averaged nine per trip out of a total of 6,000 quarts packaged in paper containers, about one-seventh of one percent. The highest number of leakers on one load was 40. Three of the seven loads had none at all. Reduction in the number of leakers was effected by putting a slightly heavier layer of paraffin on the containers.

The contract provided for shipment of 20 quarts per case. Officials of Company X believe that decreasing the number of quarts to 12 per case would help solve the leaker problem if it again confronts them.

Consumer acceptance. Both Navy officials and Company X report a high degree of acceptance of reconstituted concentrated milk at Key West. In the Navy mess the reconstituted product is made available in Norris dispensers and it is reported that sailors may take as many glasses as they want. Records are not available of the amount consumed per person.

Favorable reports from Boston and Key West coincide with tests made on an experimental basis. In October, 1950, the National Dairy Products introduced concentrated milk in Wilmington, Delaware. Before venturing they tested the product thoroughly both in the laboratory and in the home. One hundred Philadelphia families were supplied with concentrated milk during a 30-day period. They reported approval of its flavor, richness, convenience, versatility, and keeping qualities. Of family

^a Average Class I price for July to September 1951, the period covered by the Navy contract.

^b This includes the cost for receiving, pasteurizing, homogenizing, concentrating, packaging, loading, and profit.

^c Milk was hauled by the Refrigerated Transport Company, Inc., in a refrigerated truck. The rate charged was \$2.53 per 100 pounds of weight, including the milk, containers, and cartons, with a minimum of 20,000 pounds.

members questioned, 95.7 percent either said they could tell no difference or preferred concentrated milk. Only 2.9 percent preferred regular milk.¹

In April 1951, the University of Illinois conducted a taste test in which 334 people expressed their opinions concerning the difference between regular homogenized milk and concentrated milk. More than half were able to distinguish reconstituted milk from regular milk but they reported that the difference was very slight. Many preferred concentrated milk.²

How long will concentrated milk keep? Various tests have shown that high-quality concentrated milk before reconstitution under uniformly cold refrigeration will keep for at least two weeks. Since only 2½ days are required for shipping from Illinois to the most distant market on the Atlantic seaboard, the remaining 11½ days are ample for sale and distribution. When held at a low temperature, well-processed milk of high quality may keep even longer. On one submarine concentrate kept under refrigeration for five weeks was in good condition when reconstituted. Further experimentation will be necessary before the keeping time of this product can be predicted with certainty.

What are the potential savings to consumers in the use of concentrated milk? The greatest opportunities for selling concentrated milk from the Midwest are in the South and East where prices of regular milk are high. Potential savings ranging from around three to six cents per quart of regular milk were found to be possible in 12 markets in these areas (Figure 1 and Table 1). These computations were based upon a comparison of the Navy contract price for the milk plus processing, and costs of transportation with present wholesale prices charged by dealers for milk sold to stores. Larger savings would be possible if the milk sold were of a lower butterfat content than that prevailing in these markets.

Major savings in home deliveries of milk would also be possible if deliveries were made once a week instead of every other day. Assuming a delivery cost of six cents per quart, nine quarts a week on an every-other-day basis would cost 54 cents. Delivery of three quarts of concentrated milk at the same rate would cost 18 cents. A shift to once-a-week delivery of concentrated milk would save 36 cents, or four cents per quart of regular milk. This saving would, of course, be offset by the concentrating cost of a little over one cent per quart.³

Potential savings in the use of concentrated milk were discussed by

¹ See footnote 1, page 1237.

² The results of this experiment are reported in the next article in this issue of *Illinois Farm Economics*.

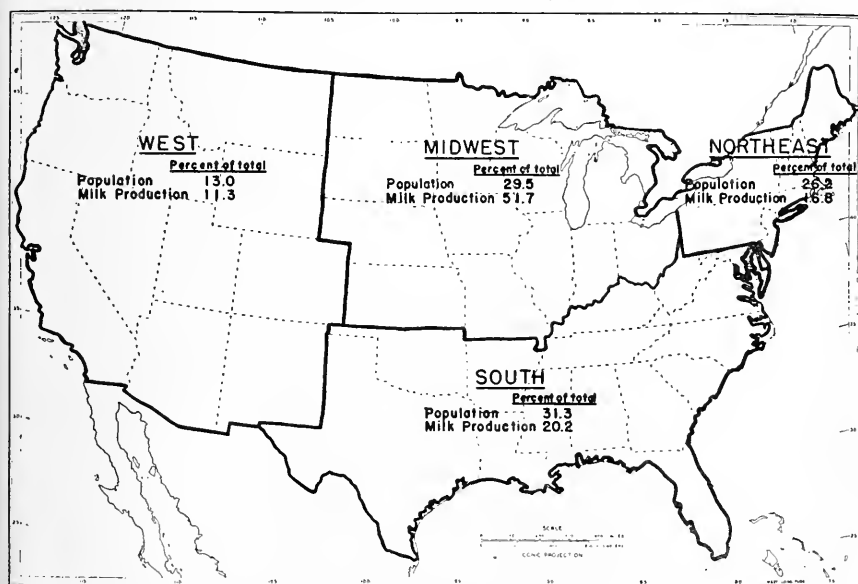
³ *Illinois Farm Economics*, March-April 1951, p. 1134, Table 1, footnoted.

FIG. 1. — ACTUAL AND POTENTIAL MARKETS FOR ILLINOIS CONCENTRATED MILK



Source: See Table 1.

FIG. 2. — DISTRIBUTION OF POPULATION AND MILK PRODUCTION, BY REGIONS, UNITED STATES, 1950



Source: United States Census of Population, Bureau of Agricultural Economics, USDA.

TABLE 1. — CLASS I PRICE TO FARMERS PLUS COSTS OF HOMOGENIZING, PASTEURIZING, CONCENTRATING, BOTTLING, AND TRANSPORTING CHICAGO GRADE A MILK TO STORES IN SPECIFIC MARKETS COMPARED WITH REGULAR WHOLESALE PRICES OF MILK AT STORES IN THESE MARKETS, AUGUST, 1951

Market	Chicago Class I price to farmers plus Company X's gross handling margin ¹	Trucking cost ²	Total cost for 3.4 percent milk f.o.b. market ³	Prevailing butterfat test of milk sold ⁴	Adjustment at 8.0 cents per one-tenth point ⁴	Price per quart of reconstituted milk with butterfat test of market ⁵	Regular wholesale price of dealers to stores ⁶	Potential savings to customers Milk with prevailing butterfat test ⁶	Straight percent milk ⁷
			(cents per one-third quart of concentrated milk)	(percent)		(cents per quart of milk)			
Jacksonville, Fla.		1.37	16.59	4.25	1.46	18.05	24.00	5.95	7.41
Miami, Fla.		2.11	17.33	4.00	1.03	18.56	23.00	4.44	5.67
Houston, Texas		1.61	16.83	4.00	1.03	17.86	22.00	4.14	5.17
New Orleans, La.		1.18	16.40	4.00	1.03	17.43	21.00	3.57	4.60
Pittsburgh, Pa.		.78	16.00	3.50	.17	16.17	21.00	4.83	5.00
Baltimore, Md.		1.08	16.30	4.00	1.03	17.33	20.50	3.17	4.20
Rochester, New York		.87	16.09	3.50	.17	16.26	20.00	3.74	3.91
Providence, R. I.		1.13	16.35	3.70	.52	16.87	20.00	3.13	3.65
Boston, Mass.		1.07	16.29	4.00	1.03	17.32	20.00	2.68	3.71
Philadelphia, Pa.		1.13	16.35	3.70	.52	16.87	20.00	3.13	3.65
Buffalo, New York		.80	16.02	3.50	.17	16.19	19.50	3.31	3.47
New York, N. Y.		1.17	16.39	3.50	.17	16.56	19.50	2.94	3.11

¹ Contract price f.o.b. Illinois plant in Chicago milksheds between Company X and United States Navy for concentrated milk to be shipped by refrigerated truck in quart paper containers to the Naval base at Key West, Florida.

² Obtained through the courtesy of George L. Bowen, Terminal Manager, Refrigerated Transport, Inc., Chicago, Illinois, in letter dated August 23, 1951. Based upon minimum load of 20,000 pounds including 18,000 pounds of milk and 2,000 pounds tare.

³ Sum of Chicago Class I price of Grade A milk of 3.4 percent butterfat content plus Company X's gross handling margin, plus transportation costs f.o.b. cold storage rooms in respective cities. The Navy contract calls for concentrated milk with a butterfat content of 3.4 percent when reconstituted on a three-to-one basis, or 3.392 percent when reduced to regular milk by dividing by 3. For convenience, a butterfat content of 3.4 percent is used in this table when showing facts relative to ½ quarts of concentrated milk. This (3.4%) is approximately the butterfat content of this milk when reconstituted on a three-to-one basis.

⁴ From USDA Fluid Milk Reports, June to August, 1951. The Chicago butterfat differential from July to September averaged 8.0 cents per 100 pounds per 1/10 point of butterfat. This figure was multiplied by the difference between the prevailing butterfat test of milk sold and 3.4 percent milk and divided by 46.5 to get a per-quart basis. For example, Jacksonville's butterfat test was 4.25 percent, or 8.5 points above the 3.4 percent. Eight and one-half times 8 cents divided by 46.5 equals 1.46 cents a quart. All data from these Reports other than for Chicago Class I price and fat adjustment, were for August, 1951.

⁵ Equals sum of price of 3.4 percent milk plus extra value of butterfat.

⁶ Regular wholesale price at stores minus price per one-third quart of concentrated milk with the same butterfat content as that of the market.

⁷ Regular wholesale price at stores minus price per one-third quart of concentrated milk of 3.4 percent butterfat content.

the president of a large dairy chain as follows:¹ "The big savings will come when shipping costs are cut in the deliveries from the processing plants to the distributing points and the various communities. And further savings will come when door-to-door milkmen have to make fewer trips, perhaps only one a week."²

What about milk supplies and potential returns to producers? Midwestern states in 1950 had 30 percent of the population in the country and produced 52 percent of the nation's milk (Figure 2). Extension of markets from the Midwest to milk-deficient areas of the South and East will bring higher returns to producers, permit lower prices to consumers, and tend to result in higher per-capita sales. For example, the sale of concentrated milk in Florida has meant that during July to September 1951, 657,900 pounds of milk produced in the Chicago area were diverted from what would have been Class IV to Class I use. With the difference between Class I and Class IV price of \$1.31 per 100 pounds, this single contract provided increased returns of \$8,618 to farmers in the Chicago milkshed.

Lower milk prices in southern and eastern markets are likely to increase per-capita sales just as lower prices have increased them throughout Illinois in recent years.³ Higher milk sales are particularly desirable in the southern states where public health has been impaired because of inadequate diet.

Concerning the nutrition and health status of the South, Dr. Margaret G. Reid has stated: "Southern states have a relatively high proportion of families with low income and poor diets. In relative health standing all states of the South rank in the fourth or lowest quartile, except Oklahoma, Kentucky, and Florida which are in the third quartile."⁴

Although sales of milk in southern markets have increased in recent years, they are still materially lower than those in many of the midwestern markets. Per-capita sales in New Orleans, for example, increased from .50 pint daily in 1940 to .59 pint daily in 1950.⁵ The 1950 figure, however, was less than three-fourths that for Chicago (.81 pint daily),⁶ and certainly far under the daily quart for children and pint for adults recommended by nutritionists. Hence, expansion in the sales of low-cost

¹ *Wall Street Journal*, May 17, 1951.

² With once-a-week delivery, each route driver could handle five routes per five-day week, instead of two routes on an every-other-day basis for a six-day week.

³ *Illinois Farm Economics*, October-November 1950.

⁴ *Food for the People*, New York: John Wiley and Sons, Inc., 1943, p. 329.

⁵ Data obtained through the courtesy of the New Orleans Federal Milk Market Administration. These data do not include skim milk, buttermilk, flavored and skim milk and cream items reported in Class I sales.

⁶ *Illinois Farm Economics*, July 1951, pp. 1189-1195.

concentrated milk in areas of high-cost milk is definitely in line with public interest.

Will expanding sales of concentrated milk be permitted? Will expansion in sales of concentrated milk be permitted by local groups such as dealers, labor organizations, state control agencies, producer groups, and public health agencies?

Although there are many institutional barriers still to be overcome, it seems to the author only a question of time before concentrated milk and other milk products shipped from low-cost areas will be accepted in most markets in the United States.

Several recent Supreme Court decisions have favored the future of concentrated milk by breaking down trade barriers and making possible free intermarket shipments of milk. These include seven state Supreme Court decisions, three in Illinois, and one each in Texas, Arkansas, Iowa, and Michigan.¹ More recently the case of the Dean Milk Company versus the City of Madison drew a ruling from the U. S. Supreme Court in January 1951.

Reduced to simple terms the essence of these decisions is:

1. The city has authority to set up requirements dealing with flavor and cleanliness.
2. The city has no authority to regulate the area from which milk is secured or where bottled or pasteurized, so long as it conforms to quality requirements.
3. A city has no authority to exact exorbitant fees which act as trade barriers.

As long as we continue to live under a system of free competitive enterprise, a policy of intermarket shipments of concentrated milk seems fair to farmers, dealers, and labor. Both producers and dealers, however, agree that the people of the South and East must be protected by safeguards insuring the purity, flavor, and cleanliness of the milk they use. These safeguards may be in line with their own health standards. Dr. D. S. Robertson, director of milk sanitation of the city of San Antonio, Texas, has suggested the following requirements: (1) bacteria count not more than 200,000 in raw milk and not more than 30,000 for pasteurized

¹The Illinois decisions were reported in *Illinois Farm Economics*, October-November 1950, pp. 1073-1084. The cases were: Higgins vs. City of Galesburg (1948), City of Rockford vs. Heg (1948), and Dean Milk Company vs. Waukegan (1949). The other cases were: Texas, the City of Abilene vs. Tennessee Dairies (1949); Arkansas, McClendon vs. the City of Hope (May 1950); Iowa, Miner vs. the City of Keokuk (August 1950); and Michigan, Grocery Co-op Dairy vs. the City of Grand Haven (1950).

milk; (2) hemolytic count below 1,000; (3) acidity not over .15; (4) good flavor; (5) temperature 50° or under; and (6) no adulteration.

From the viewpoint of the public, expanded sales of concentrated milk will mean higher per-capita sales of milk and consequently a higher national health rating. The producer, too, will benefit by the increased income from Class I milk and the dealer will have a new and profitable product to sell.

R. W. BARTLETT

CONSUMER ACCEPTANCE OF CONCENTRATED MILK

A recent survey conducted in the Department of Agricultural Economics at the University of Illinois showed that most people who participated in a taste test either were unable to tell any difference between reconstituted concentrated milk and regular homogenized milk, or if able to distinguish a difference this was so slight it was barely perceptible.

The results of this survey are in line with a more extensive survey made by the National Dairy Products Corporation in Wilmington, Delaware. This survey showed that among more than 100 families who used this product regularly for several weeks, 95 percent of the individuals questioned were unable to distinguish a difference between reconstituted "concentrated" milk and regular milk.¹

The survey dealing with concentrated and regular homogenized milk was conducted during a recent Open House at the University. This survey was made in an attempt to discover if the average person was able to distinguish between reconstituted concentrated milk and regular homogenized milk. Concentrated milk is whole fresh milk from which most of the water has been removed. Regular and concentrated milk from three companies were used; and of these three brands two were concentrated three to one, the other concentrated two to one.

Each participant was given a sample of reconstituted concentrated milk and a sample of regular homogenized milk of the same brand. The results are shown in Table 1.

While an analysis of these data indicates that there is a significant difference between reconstituted concentrated milk and regular homogenized milk this difference was so slight that many people who identified a difference in taste could not identify which sample was reconstituted and which was regular. Of those who were correct in that identifying one sample was concentrated and the other regular milk, most of them admitted to the attendant that they were guessing.

There were many such comments, as "I don't really know what regular

¹ *Illinois Farm Economics*, March-April, 1951, p. 1133.

TABLE 1. — IDENTIFICATION OF RECONSTITUTED CONCENTRATED MILK AND REGULAR
HOMOGENIZED MILK SAMPLES BY PERSONS TAKING TASTE TEST
IN URBANA, ILLINOIS, MAY 19, 1951

Brand	Identification of samples			Total
	Correctly	Wrongly	Cannot tell difference (number of persons)	
A.....	76	38	24	138
B.....	48	29	11	88
C.....	49	38	23	110
Total.....	173	105	58	336
Percent.....	51.5	31.2	17.3	100.0

milk should taste like." Most comments were favorable to concentrated milk. Some people stated they preferred concentrated milk or they thought that it had a higher butterfat content. A few technical dairy people could distinguish and could identify correctly which was reconstituted concentrated milk, but these people do not constitute typical consumers.

G. C. KLEIMAN

QUALITY AS A LIVESTOCK MARKETING FACTOR

Most of the livestock market reports are based on a series of quotations for various grades of livestock. These grades are an indication of quality. There are no easily defined objective grade standards for livestock. Livestock grades are a composite estimate arrived at after carefully weighing the following factors: conformation, finish, quality, and maturity. It is frequently not profitable to attempt to feed livestock for the top grades, either because of cost-price relationships or because of the nature and type of livestock or feed being considered.

Southern Illinois study. A study of livestock marketed at National Stock Yards, Illinois, for 1950 indicated some characteristics of livestock produced in the 16 southern Illinois counties.

The grades of cattle and calves in descending order are: prime, choice, good, commercial, utility, canner, and cutter. The grades for sheep and lambs are: prime, choice, good, utility, and cull.

Less than three percent of the cows weighing less than 800 pounds graded commercial or above. For the 800-995 pound cows the corresponding figure was 13 percent; 1,000 pounds and over, 44 percent. For bulls under 800 pounds 60 percent were utility or lower; 800-995 pounds, 47 percent; 1,000-1,195 pounds, 18 percent, and over 1,200 pounds, less than three percent. For other cattle under 600 pounds, 38 percent graded utility or lower; 600-795 pounds, 18 percent; 800-995 pounds, 10 percent; 1,000 pounds and over, seven percent.

TABLE 1. — RELATION BETWEEN SIZE OF CONSIGNMENT AND GRADE OF LAMBS SOLD BY ILLINOIS FARMERS IN 16 COUNTIES AT NATIONAL STOCK YARDS, ILLINOIS, 1950

Size of consignment	Good-choice	Commercial and lower
(head)	(percent)	
Less than 20.....	58	42
20-39.....	73	27
40 and over.....	82	18

For all the classes of cattle studied there was a relationship between weight and grade. This is not always true, but quite frequently with cattle, as weight increases, grade also increases. *But, often the better price for the higher quality is inadequate to pay for the additional feed consumed to produce this quality.*

A similar relationship was found with veal calves. Of those weighing less than 160 pounds, 23 percent graded good or better; 160-199 pounds, 69 percent; and 200-239 pounds, 87 percent.

Less than 12 percent of the lambs weighing under 70 pounds graded good or better. For the 70-79 pound range, 48 percent; 80-89 pounds, 84 percent. A further study of the size of consignment of lambs indicated that as size of shipment increased the grade of lambs increased (Table 1).

This confirms the impression that the farmer with the larger flock of sheep handles them in such a way as to produce better lambs.

In this 16-county area 10 percent of the cattle (excluding cows and bulls) weighed less than 600 pounds, and only 13 percent weighed over 1,000 pounds. Nearly 25 percent of the cows weighed less than 800 pounds and 28 percent weighed 1,000 pounds and over. Twenty-seven percent of the bulls weighed less than 800 pounds and nearly half weighed less than 1,000 pounds. Seventeen percent of the calves weighed less than 160 pounds; 35 percent weighed 160-199 pounds.

In planning a livestock program consideration should be given to quality-price relationships. There is little that can be done to improve inherent quality of livestock on hand. Rather it is a question of recognizing the quality on hand and feeding accordingly.

But for many farmers in the state livestock income can be increased at little or no extra feed costs by improving the quality of breeding stock. In many cases this means using larger cows and bulls, also pushing the veal calves and lambs so they keep gaining. Frequently this implies a change in feeding practices, such as producing a veal calf on milk instead of grass and producing lambs on a grass-legume or legume pasture instead of on a straight grass pasture.

W. J. WILLS

H. P. Rusk

Director, Extension Service in
Agriculture and Home Economics

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II

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TABLE A.—INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production ¹⁰
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-39
1935	99	104	102	99	89	80	91	86	79	87
1936	100	107	105	99	105	106	107	101	91	103
1937	107	113	118	105	111	111	105	107	109	113
1938	98	91	90	99	96	101	102	100	85	89
1939	96	86	84	98	99	102	104	107	100	109
1940	97	89	89	99	105	114	115	115	114	125
1941	108	108	112	105	140	147	140	138	165	162
1942	123	138	142	121	193	198	163	176	242	199
1943	128	162	165	136	244	236	174	217	331	239
1944	129	163	165	145	255	243	168	242	344	236
1945	132	168	171	151	270	248	164	250	294	203
1946	150	195	204	165	312	302	185	255	272	170
1947	189	238	265	192	377	391	204	279	327	187
1948	205	248	275	207	383	389	189	303	351	192
1949	192	218	217	200	352	362	181	304	325	176
1950	200	224	228	204	350	360	176	330	372	200
1950 June	195	218	228	203	275	285	140	326	363	199
July	202	232	240	204	353	393	193	328	368	196
Aug.	206	234	240	205	383	344	167	335	394	209
Sept.	210	237	243	208	437	339	163	342	403	211
Oct.	210	234	235	208	538	549	264	344	416	216
Nov.	213	242	240	210	484	429	204	346	415	215
Dec.	218	247	252	212	402	371	175	359	426	218
1951 Jan.	223	256	261	217	378	393	181	356	424	221
Feb.	228	267	277	220	281	307	140	358	430	221
Mar.	228	268	276	224	303	376	168	362	435	222
Apr.	228	266	278	226	313	395	175	366	433	223
May	227	263	274	226	319	390	173	368	429	223
June	226	261	270	225	323	...	...	370	436	222
July	223	255	269	225	401	...	...	481	...	213

TABLE B.—PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			Sept. 1950	Current months, 1951		
	1935-39	1949	1950		July	Aug.	Sept.
	\$			\$1.43	\$1.65	\$1.67	\$1.69
Corn, bu.	.66	\$1.17	\$1.35	.73	.75	.76	.79
Oats, bu.	.31	.64	.76	2.01	2.16	2.19	2.19
Wheat, bu.	.86	1.95	2.02	1.27	1.25	1.30	1.32
Barley, bu.	.62	1.07	1.20	2.30	2.92	2.77	2.64
Soybeans, bu.	.90	2.19	2.49	20.90	21.00	21.20	19.80
Hogs, cwt.	8.52	18.58	18.19	26.10	31.20	31.30	31.50
Beef cattle, cwt.	7.88	21.19	24.54	26.10	29.90	29.30	29.30
Lambs, cwt.	8.36	23.43	25.06	225.00	270.00	270.00	275.00
Milk cows, head	58.00	198.33	216.67	28.90	33.50	33.10	33.10
Veal calves, cwt.	8.66	25.05	28.01	10.50	15.40	14.00	13.50
Sheep, cwt.	3.58	8.70	10.52	.57	.64	.64	.63
Butterfat, lb.	.27	.58	.58	3.45	3.95	4.00	4.05
Milk, cwt.	1.68	3.42	3.46	.33	.39	.40	.48
Eggs, doz.	.19	.40	.31	.24	.27	.26	.24
Chickens, lb.	.15	.27	.23	.60	.83	.69	.58
Wool, lb.	.25	.42	.50	2.45	1.95	2.00	2.00
Apples, bu.	1.08	2.38	2.24	19.60	19.60	19.40	19.30
Hay, ton ¹¹	9.39	22.68	20.77				

^{1 12} For sources of data in tables see the preceding issue.

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating. H. P. Rusk, Director. Acts approved by Congress May 8 and June 30, 1914

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EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS

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Articles in This Issue

	PAGE
Milk Vending Machines — G. C. KLEIMAN and R. W. BARTLETT.....	1249
Are Illinois Farm Tenants Fading Away? — C. L. STEWART and F. E. JUSTUS.....	1255
The Place of Price Ceilings in Inflation Control — E. J. WORKING....	1261
Farm Tank Holdings of Milk — R. W. BARTLETT.....	1265

MILK VENDING MACHINES

Merchandising milk through vending machines in factories, service companies, offices and schools presents a profitable sales outlet for dairy companies. Some have already purchased machines. Others are interested in learning what machines to buy, where to place them advantageously, and how to service them. In the interests of future owners, ten Illinois dairy companies owning and operating machines were interviewed during the months of June, July, and August, 1951.

The field was found open both to the small and the large dairies. One dairy was operating a single machine; another had 90 machines. The average was 22 per dairy.

The machines were alike in being designed to dispense only packaged milk. They differed in operation. One hundred nineteen were automatic, requiring only the insertion of a coin; the others, 103, were of the manual type with a lever or small door.

Manual machines are relatively inexpensive (\$200 to \$500 depending upon the brand and the size). Mechanically simple, their maintenance cost is low. They are slow, but when placed in service companies¹ or department stores where speed of service is not important, they have proved to be dependable and economical.

Automatic machines of the same capacity are twice as expensive as manual machines, but they serve many customers in a short time. A dairy owner is justified in investing in an automatic machine if he can place it

¹Companies where repair service is available, that is, garages and public utility companies.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

TABLE 1.—NUMBER OF MACHINES PER DAIRY

Dairy no.	Number of machines*	Dairy no.	Number of machines*
1.....	90	6.....	8
2.....	35	7.....	8
3.....	30	8.....	6
4.....	20	9.....	4
5.....	20	10.....	1
		Total.....	222

* Dairy number 8 was operating only 5 of its 6 machines.

where there will be sufficient sales. In a factory, for example, when the mid-morning and the mid-afternoon "breaks" free crowds of thirsty workers, automatic machines can serve approximately five times as many customers in a given time as manual machines.

Capacity of vending machines. The machines differed in capacity, most of those studied ranging from 84 to 140 units. The capacity by size of container is shown in Table 2. Dairy owners reported that they found it most economical to operate machines with capacity slightly in excess of their maximum daily sales. When forced to use smaller machines, they either serviced them more often or installed auxiliary machines.

Maintenance. Any operator expects that his vending machines, no matter how well constructed and cared for, will break down occasionally. He may find that he has to watch the coin mechanism for signs of trouble. The bottle dispensing unit is also subject to breakdown, and experienced operators say it is wise to keep on hand the small pins and springs needed for repairing it.

Most manufacturers are very ready to service the machines they sell. If they are located at a distance, however, they cannot give immediate service. Consequently, many dairies have preferred to buy machines locally manufactured.

Dairy managers operating many machines said that they had employees especially trained by their vendor manufacturing company to keep their machines in running order. These men were usually either refrigeration

TABLE 2.—CAPACITY OF VENDING MACHINES

Size of container	Range in number of units in operating mechanism	Additional storage capacity of machine
<i>Paper</i>		(units)
One-half pints.....	84-140	250
One-third quarts.....	84-140	200
Pints.....	84-140	150
<i>Glass</i>		
One-half pints.....	84-128	100
One-third quarts.....	62-107	75
Pints.....	56-100	62

TABLE 3. — NUMBER OF MACHINES BY SIZE OF CONTAINER

Size of unit	Number of machines
One-half pint.....	20
One-third quart.....	194
Pint.....	8
Total.....	222

eration repairmen or general repairmen. Since they understood the mechanism of the vending machines and knew where to look for wear, they often replaced parts before any breakdown actually occurred. When they were not able to forestall trouble, they repaired machines rapidly and prevented their being kept out of service.

Small dairies have at least one employee who is mechanically inclined. He can be trained to make small repairs.

Form and size of the unit sold. Operators serviced their machines with either glass or paper containers according to the custom of their dairy. Paper was preferred. The size of the unit varied: one-half pint, one-third quart, and one pint. The one-third quart was the most popular unit. Seven-eighths of all the machines studied dispensed this size (Table 3).

Price per unit. All dairies agreed in charging ten cents for a one-third quart container and 15 cents for a pint. Two companies owned machines which dispensed one-half pints at seven cents per unit.

When vending machine prices are in multiples of five cents, the coin mechanisms are comparatively simple and the machines less likely to get out of order.

Location requirements. When placing machines, dairy companies considered the type of activity in the location, the employee income level, the accessibility of the machines, the number of "break" periods in factories and offices, and the sex of the workers. If the industry was seasonal, they also inquired when the customer potential was high and when low.

This study showed that dairy companies prefer factory locations. Of 222 machines, 175 or about four-fifths were in factories (Table 4). Most companies, before deciding to install a machine, looked for a factory with at least 100 employees. A few insisted on 300. In choosing where to place the machines within the factory, the vending operator generally sought the cooperation of the management representative. Together they looked for a sanitary, attractive spot, accessible to a large number of patrons and yet so located as not to obstruct the flow of traffic.

Experienced operators say that a good general rule is that any place attracting people is worth investigating as a possible site for a machine.

Percentage paid location. Most dairy companies worked through

TABLE 4. — LOCATION OF MACHINES IN STUDY

Location	Number of machines
Factories.....	175
Department stores.....	15
Service companies.....	15
Gas stations.....	10
Schools.....	2
Other.....	5
Total.....	222

the factory unions when wishing to install machines. Although they talked up the health angle, they also offered the union commission on gross receipts, usually ten percent. This arrangement sometimes swelled the union athletic or flower fund by as much as \$75 or \$90 per month, but it also helped the dairy by preventing rival companies from installing machines and by insuring regular patronage.

Regular servicing needed. The greater number of machines in this study were serviced by wholesale routemen. A few of the smaller dairies, however, used retail routemen.

In all cases, the purpose of servicing was to insure a supply of fresh milk for the customers. This meant that the machines had to be serviced once or twice a day. In some machines, the method of refilling was such that the old milk was automatically sold first. In others the delivery man had to move the old milk into a new position. When the machines contained storage space, the employee in charge of the machine had a key and could refill the machine from the reserve.

Although the time required for servicing was usually not more than fifteen to twenty minutes each day, additional time was needed for keeping the machines sanitary. At least once, sometimes twice, during the week, servicemen cleaned both the outside and the inside of the machines. They found that one of the best ways to keep the machines fresh was to wash them with a solution containing a drop of wintergreen.

A dairy operator is wise to consult the local health authorities before purchasing and installing vending machines. He will find that many health departments prohibit certain types of machines such as bulk vendors.

Since vending machines serve a permanent and special group of patrons, the milk sold should be of the highest quality.

Kind of milk sold. Most dairies in this study used only chocolate and white milk in their machines. The ratio of two-thirds chocolate to one-third white was the same as that reported in other studies on vending machines.¹ In addition a few dairies sold buttermilk or orange drink.

¹ A. E. Yahalem, "Plus Profits in Milk Vending," *American Milk Review*, April, 1951.

TABLE 5.—COMPARATIVE RETURNS FROM MILK DISPENSED THROUGH VENDING MACHINES AND MILK SOLD WHOLESALE BY DAIRIES

	Vending machine	Wholesale
Units sold per day.....	70 ^a	70 ^a
Price per third quart.....	.10	.06 ^b
Gross returns per day.....	\$7.00	\$4.20
Approximate number of working days per year.....	255	255
Total returns per year.....	\$1,785.00	\$1,071.00

^a Dealers using automatic machines estimated this volume necessary to meet expenses.

^b Estimated price charged by dealers for milk sold to restaurants, hotels, and other.

The purchaser of a vending machine should consider the tastes of his customers and remember that they may demand more than one kind of milk. Some machines can dispense only one product; others are capable of selling as many as eight. Those which offer a selection may be geared to sell all items at one price or at varying prices.

If too many items of limited popularity are offered, the operator may find that some of them remain unsold and clutter the machine. Another difficulty pointed out by Ramstad and Holland is that the time people require in making a decision when confronted with a variety to choose from may prevent others from patronizing the machine.¹

Minimum volume necessary to meet expenses. Although it is impossible to determine exactly the number of sales an automatic machine must make daily to meet all expenses, a fairly accurate estimate is 70 units (Table 5). Since both the initial cost and the servicing of such a machine run high, anyone investing should know approximately what daily volume he can expect for each machine. He will amortize his machine, perhaps over a period of four years, at the end of which time it may or may not be obsolete. His labor bills are even higher than the cost of his machine. Ramstad and Holland in their study conclude that, "during the lifetime of a vending machine labor costs equal to several times the original cost of the equipment may be expended in servicing, maintaining, and cleaning it."²

If one assumes a volume of 70 units daily, the gross return per year to a dairy plant from a vending machine is \$1,785. The gross return from the same volume of milk sold wholesale from a plant would be \$1,071 (Table 5). The difference is \$714. After subtracting an estimated depreciation charge of \$200, the operator has approximately \$500 for servicing, maintaining, and cleaning the machine. Some operators will need this sum to cover running expenses. Others who are especially efficient will show a profit on a volume of 70 units per day.

In this study complete data on 25 machines owned and operated by

¹ R. F. Holland and P. E. Ramstad, "Selecting Vending Machines," *American Milk Review*, July, 1951.

² *Ibid.*, page 36.

TABLE 6. — AVERAGE DAILY VOLUME OF 25 MACHINES
OWNED BY TWO COMPANIES

Volume	Number of machines
0-100.....	6
101-200.....	9
201-300.....	6
301-over.....	4

two dairies were collected (Table 6). All machines were located in factories employing over 300 people. Six machines dispensed 100 units per day or less. Four dispensed over 300. Assuming a mid-point in range, the average daily volume of all these machines was 180 units per day. In view of their own estimated "break-even" of 70 units per day, it is apparent that these companies were finding the majority of their 25 machines very profitable. It is estimated that the average daily volume of the 222 machines was 120 units per day, or considerably over the "break-even" point.

The daily volume of the machine dispensing the largest number of units for each of ten companies ranged from less than 100 to over 300 (Table 7).

TABLE 7. — AVERAGE DAILY VOLUME OF HIGHEST VOLUME
MACHINE OWNED BY EACH OF 10 COMPANIES

Volume per day	Number of machines
0-100.....	2
101-200.....	4
201-300.....	1
301-over.....	3

Summary. Before World War II many dairies purchased milk vending machines hoping for the quick and easy profits they saw made from machines dispensing products other than milk. Their ventures often failed, not because the idea behind milk vending was an impractical one, but because their equipment was poor, their operating methods inefficient, and their knowledge of the business inadequate.

During the war, however, when government authorities placed emphasis on the dietary value of milk, both dairy and vendor manufacturing companies felt a renewed interest in milk vending. The manufacturers put out better machines and the dairy companies installed them in factories and munition plants, especially in those where fumes from smoke made it necessary that milk be available to combat ill effects to health from these hazards.

Careful investigation has shown that large volume sales may be

made through vending machines, and that these sales may be profitable. Any interested dairy, large or small, may do well to invest in one or more machines providing the management chooses the right machines, locates them with care, and sees that they are well serviced.

Vending machines benefit the public as well as the companies owning them. They tend to increase milk sales and improve the health of the people.

G. C. KLEIMAN and R. W. BARTLETT

ARE ILLINOIS FARM TENANTS FADING AWAY?

There are now fewer tenant families, but about the same amount of rented land operated by tenants and part owners as when World War II began.

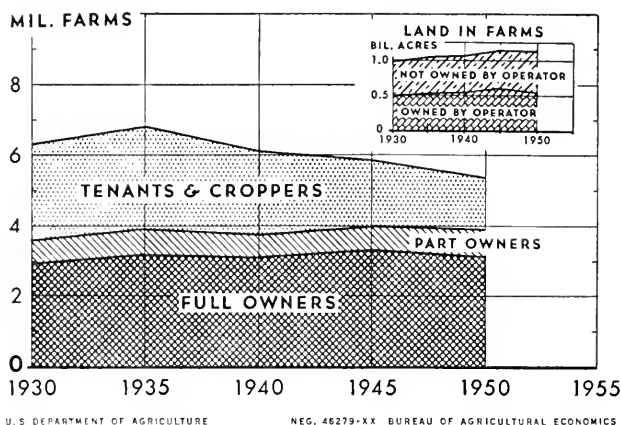
Tenant farmers in Illinois were only 34.6 percent of all farmers in Illinois in 1950. This federal census figure for Illinois tenancy is much less than the 43.9 percent in 1940. The number of tenant families in 1945 was 12,000 below the 92,000 of 1940 and nearly 25,000 below the high water mark of 104,000 in 1910. With only about 67,500 tenant families in 1950, a mark was set well below that of 1945, which was the first time the Illinois figure was below the 65-year low mark of 1880. Between 1945 and 1950 tenant numbers were reduced nearly 12,500 more. In 1950 tenants made up just a little more than a third of the 195,000 farm families of the state.

Tenant families have been decreasing not only in Illinois agriculture, but in that of the United States as a whole (Figure 1).

Tenant families operate only land that they rent from others. Decline in the numbers of these families does not mean that the land has all gone to families that own all the land they farm. In Illinois the tenant families have lost numbers heavily in the parts of the state where farms have been comparatively small. In parts of the state where farms have been large and growing, however, they have held their own. Also, part-owner renting accounts for increased amounts of farmland in Illinois, as in the country as a whole.

Let us take a look at the land itself. The proportion of the farmland rented by operators of the two groups, tenants and part owners, changed only slightly from 1940 to 1950. In each 100 acres of all farmland, the amount rented was 58.2 acres in 1940, 57.9 acres in 1945 and 57.7 in 1950. When an estimate is made as to the total value of all farmland and buildings that was rented, as compared with the dollars worth operated by owners, the proportion of Illinois farm real estate values rented was higher in 1950 than in 1940. This is because the districts of the state in which largest proportions of farm acres were rented in 1950 have had their real estate values increased proportionally more than the other dis-

FIG. 1. — CHANGES IN FARM TENURE, UNITED STATES, 1930-1950



These charts for the United States as a whole serve to highlight the 1950 census results for Illinois. In both nation and state the tenants decreased in total numbers and in numbers per 100 farmers after 1935. Operators who are "part owners and part tenants" became an increasing proportion of all farmers in the nation and notably in Illinois. The proportion of farm acres not owned by the operators was less than half in the nation from 1930 to 1945 and in 1950 almost half, but in Illinois the land not owned by operators has been between 55 and 60 percent.

tracts, 1945-1950, and over almost any period one chooses that ends in 1950.

Measured in dollars worth of farmland and buildings, the rented units of Illinois agriculture exceeded 60 in every 100 in the early 1950's.

Preliminary results from the 102 counties of Illinois for 1950 give basis for the following comparisons with five, ten, and in some cases 100 years before:

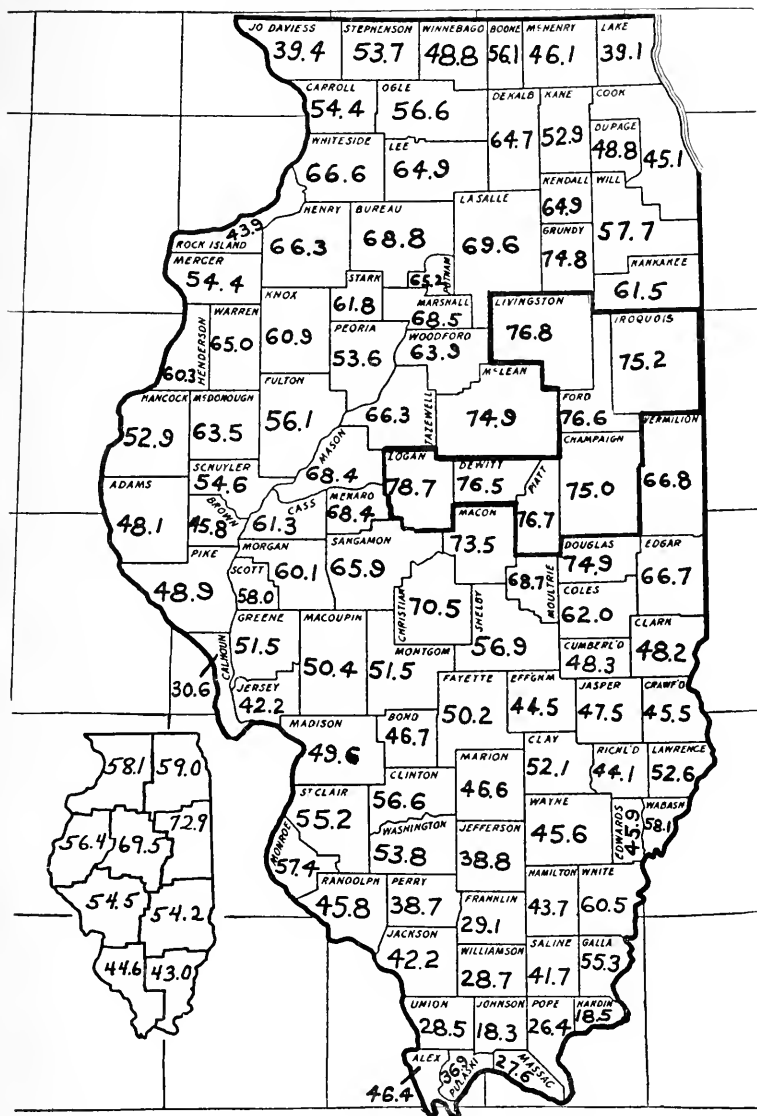
1. There were slightly fewer than 31 million acres in farms in Illinois in 1950. This is between 600 and 650 thousand acres fewer than in 1945 and over 54 thousand acres fewer than in 1940. The farm area expansion of World War II had subsided somewhat by 1950.

2. Rented acres in 1950 were about 440 thousand fewer than in 1945 and 280,000 fewer than in 1940.

3. Owner-operated acres increased over 225 thousand between 1940 and 1945, but in 1950 were 180,000 fewer than in 1945. Those owners who operated indirectly by hiring salaried managers, were handling 16 percent fewer acres in that way in 1950 than in 1940.

4. In each 100 acres of land in Illinois farms in 1950 nearly three-fifths were rented. There were seven counties in which over three-fourths of the farm land was operated under lease (Figure 2). The percentage

FIG. 2.—FARM LAND OPERATED UNDER LEASE, ILLINOIS, 1950
(Percentage of all farm land that was rented by tenants
and by part owner operators)



Illinois counties with 75 to 79 percent of the land operated as rented land in 1950 were Logan, Livingston, Piatt, Ford, Dewitt, Iroquois and Champaign. Logan and Ford counties were the only counties that had more than 75 percent of their land rented in 1940. Of the 15 Illinois counties having land prices averaging \$260 or more an acre in 1950, four in the Chicago area, Cook (\$428), DuPage (\$337), Lake (\$277) and Kane (\$260), had less of their farm land rented than most counties in which the average value was half as high, but in the 11 downstate counties of land prices averaging \$260 or more, more than two acres in three were rented. Among southern Illinois counties were seven in which the proportion of land rented was only about half the state average of 57.7 acres per hundred. Here land prices were generally much below the state average.

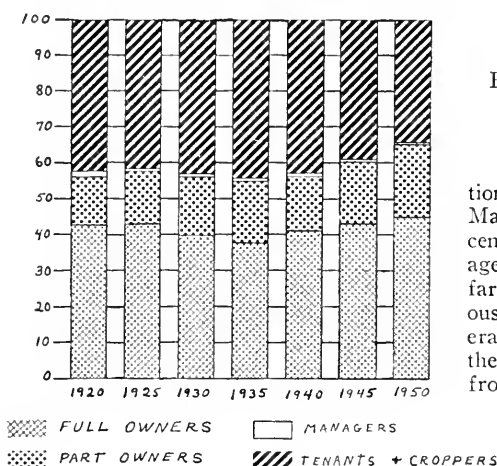


FIG. 3.—PROPORTION OF FARMS IN VARIOUS TENURE CLASSES, ILLINOIS, 1920-1950

Tenant farms decreased in proportion of all farms from 1935 to 1950. Manager farms, always a small percentage, were an even smaller percentage in 1950. As tenant and manager farms were proportionally less numerous, part owners and full owner operators increased in relative numbers, the former from 1940 and the latter from 1935.

rented in 1950 was 57.7 as compared with 58.2 in 1940. While the decline was small, it was in line with a trend downward from a historic high ratio of rented acres in 1935 (Figure 3).

5. The number of farms in Illinois in 1950 was approximately 195 thousand. This was nine thousand fewer than in 1945 and 18 thousand fewer than in 1940. For every 100 farms in 1940 there were between eight and nine fewer in 1950.

6. The average number of acres per farm in 1940 was 145, but this increased to 159 in 1950. Exactly 100 years earlier, in 1850, the average size of a farm was 158 acres. By 1880, however, area per farm had dropped to 124 acres and until after 1900 there was little net change. In the 50 years following 1900 the average Illinois farm increased 34 acres. The 14-acre increase from 1940 to 1950 was about the same as occurred in the 25 years preceding 1940. Less increase in size of farms is shown than would be the case if the small farms near towns and cities had been left out of account.

7. The number of rented acres shrank only a fraction of a percentage point between 1940 and 1950, as stated, but this has to be viewed in the light of the reduced numbers of (1) farms operated by tenants, and (2) of nontenant farms as well. All farms were decreasing in numbers, 1940 to 1950, by nine percent, but this was small compared with the 26 percent reduction in number of tenant farms. Tenant families in 1950 were only three-fourths as numerous as in 1940, but the extent of the area rented was reduced hardly at all. Note, especially, how three of the nine districts of Illinois fared in this respect:

District	Decrease in tenant families, 1940-1950		Increase in rented acres, 1940-1950	
	Shrinkage in numbers	Percent	Increase in numbers	Percent
East central.....	1,482	13	40,000	3
Central.....	2,077	18	19,000	4
East southwest.....	4,275	37	9,000	3

In the other six districts of Illinois in contrast to the increase in rented acres found in these three districts there was decrease, but the decrease in rented acres was much less than the decrease in tenant families. More complete results are expected to show that in Illinois (1) tenant farms have become increasingly above the average of all farms in size, (2) renting of additional land by operators who own some of the land they farm has increased, or (3) a combination of these trends has prevailed in Illinois.

Part owners have been numerous in southern Illinois districts and in some central counties for many years. Many former tenants are believed to have bought some acreage and to have enlarged their scale of operations by renting other land, in some cases going up and down adjoining roads with modern field equipment. In 1950, 20.4 percent of all farm operators were part owners as compared with 15.4 percent in 1940. Field-renting by tenants and part owners has apparently increased.

8. Cash tenants in 1950 were about 11 percent of all, whereas in 1940 they had been over 20 percent of all. Cash tenants, while decreasing moderately across the center of Illinois where they have not been numerous at any recent date, have shown sharply reduced ratios to all tenants in the northeast dairy district.

9. Share-cash tenants pay cash for only a part of the land they rent, and handle the most of the land on shares. They decreased in total numbers but increased in the proportion they bore to all tenants between 1940 and 1950. They were 46 percent of all tenants in 1940 and 55 percent in 1950.

10. Strictly share tenants and croppers, the latter often being more in the nature of employees, decreased in Illinois both in numbers and percentages from 1940 to 1950 and especially from 1945 to 1950.

11. Both those who own the land they farm and the tenants have contributed to the pattern of land use. The acreage in various uses in Illinois in the year preceding the census enumeration, has been studied to note the changes.

Cropland used only for pasture in 1939 was about 16 percent of all land in farms in Illinois. In 1944 it was less than four percent and in 1949 was still only eight percent.

The amount of woodland pastured 15 years ago may be contrasted with the amount so pastured more recently. There was a decrease of 25 percent in area of woodland pastured in the state in 1944 as compared with 1934. By 1949, however, three-fifths of the decrease had been erased. Pasturing woodland was notable in western, central and southeastern Illinois.

12. Land in harvested crops was 59 percent of all farmland in 1939, 64 percent in 1944 and 65 percent in 1949. The high proportion of cropland rented to tenants and part owners is in keeping with the intensive uses to which cropland is put.

13. Farms reporting electricity in 1950 were 87 percent of all farms. This compares with 58 percent in 1945 and 41 percent in 1940.

14. It appears that 28 percent of all farms in Illinois in 1950 were on hard surface roads, 59 percent on gravel, shell or shale roads, and 13 percent on dirt or unimproved roads.

Other indications of change in Illinois agriculture are afforded by the statistics on motor trucks and tractors. Motor trucks on farms in 1950 were about 44 percent of the number of farms, and few farms reported more than one motor truck. The corresponding ratio in 1945 was 27 percent and in 1940, 19 percent. The number of tractors on farms was such in 1950 that it exceeded by 20 percent the number of farms. While tractors were 120 percent of the number of farms in 1950, they were only 85 percent in 1945 and 60 percent in 1940. In four counties, Champaign, Douglas, Edgar, and Piatt, the number of farms reporting no tractors was between 10 and 30 percent, but in all of those counties the number of tractors was slightly over twice the number of farms reporting them. In these and other counties it is evident that a considerable number of farms had two or more tractors each.

Availability of the census information for each county in the farm bureau offices makes it practicable to examine some of the situations locally that are here described in their state-wide aspects. The few items included here are only a part of a rich fund of information which the census of agriculture gives us every five years. Efforts by the Illinois Department of Agriculture and the Bureau of Agricultural Economics to provide a part of this information at more frequent intervals have had some success, but the federal census, particularly the enumerations similar to those taken for agriculture every five and ten years will doubtless remain as a foundation for accurate understanding of our broader agricultural trends.

One can infer from the results examined that federal programs for

the reduction of tenancy have touched mostly the parts of the state where the values per farm and per acre are not at their highest. In like manner the efforts of individual farm operators to acquire land from its earnings, while apparently leading to more part ownership, appear not yet to have resulted in any widespread increase of owner operatorship when viewed in terms of acres and values of farm land.

C. L. STEWART and F. E. JUSTUS

THE PLACE OF PRICE CEILINGS IN INFLATION CONTROL

If inflation is to be controlled, there is no substitute for avoiding an inflationary increase in the supply of money. This means that the amount of bank credit available to individuals, corporations, and the government combined should not be allowed to increase any more than does the physical volume of output. It involves a federal fiscal policy such that no significant part of the government's expenses be financed through the sale of bonds to commercial banks. Direct price controls can be used as a stop-gap measure. They can check price inflation temporarily, slow down its rate of progress, but they cannot prevent price inflation for long in the face of an inflation in the money supply — at least not in the absence of a thoroughly authoritarian "police state."

There is, nevertheless, a very important place for price ceilings (or other direct price controls) in a war economy even if, through our fiscal and monetary policies, we avoid an inflationary increase in the money supply. The rapid changes in industrial production which are called for during an all-out war or during a major defense effort can cause price increases which are both unnecessary and dangerous to the public welfare in spite of thoroughly non-inflationary monetary and fiscal policies.

In order to understand this situation let us turn to a consideration of price determination during normal times. There are, at the extremes, two sorts of prices: flexible prices and inflexible prices. Most agricultural products have flexible prices. Corn, cotton, hogs and wheat are typical examples. Prices of these commodities rise and fall readily with changes in either the supplies of the commodities or with changes in the demand for them. Many industrial products, on the other hand, have quite inflexible prices. Nickel, farm machinery, automobiles and silverware are examples. Prices are determined perhaps, on the basis of calculated costs of production, contract agreements, or custom. At any rate such prices remain unchanged over considerable periods of time and production is increased or decreased to meet the amount which can be sold at the fixed price.

Many prices lie in between the two extremes. In some cases the prices may be described as "sticky" where they respond, but slowly, to changes

in demand or supply. In other cases the prices may fluctuate quite readily, but they are nevertheless only partially flexible, being made up of both flexible and inflexible components. Retail prices of many unprocessed farm products, and both wholesale and retail prices of many processed farm products or manufactured products which are made from flexibly priced raw materials fall in the latter category.

In an ordinary period of business expansion the inflexible prices remain substantially unchanged, or they may even gradually decline on the average because with expanding output the average costs of production of some commodities are reduced. Production is increased to meet whatever amount is demanded at the prevailing inflexible prices. The flexible prices constantly change with changing supplies, but on balance they tend to rise during a period of advancing business activity. This is necessary in order to adjust the available supplies to the increased demand.

In a period of declining demand the general trend of the flexible prices is downward. A short crop may, of course, result in a rise of price in spite of the declining demand, but there is likely to be little or no change in the average output of the flexibly priced products, so that their prices fall with the decline of demand. The inflexibly priced commodities decline slowly if at all, and since less can be sold at the lower level of demand, their production is reduced. As a result, unemployment develops and there is still further decline in demand. The downward spiral of depression continues until something occurs to increase demand again or to break down the inflexibility of the price structure.

If, because of war or a rearmament program there is a great increase in the demand for military goods, the situation is in some respects similar to that during a period of peace-time business recovery. There is an increase in the demand for various sorts of military supplies and for the labor and the materials necessary to produce them. Prices of the flexibly priced goods tend to rise. This is necessary in order that civilian utilization may be reduced and a larger part of the available supplies be diverted to military use. Production of the inflexibly priced goods increase—especially production of those things needed directly or indirectly for military purposes.

But if the war is a major one, or if the building up of defense is at a very rapid rate, the demand for the inflexibly priced goods may overtax the existing capacity of some of the industries. Under such circumstances, even though increased taxes are sufficient to finance all of the increase in government expenditures, the demand for some inflexibly priced commodities may be so great that it cannot be met at prices sufficient to cover all normal production costs and profits. Then prices tend to be bid up to higher levels in order that available supplies may be diverted to the military. Under such circumstances we may have inflation

occurring in some sectors of the economy even while other sectors are suffering from depression and unemployment on account of reduced civilian purchases.

The bidding up of the prices of inflexibly priced commodities in order to supply military needs is a very different matter from the bidding up of flexible prices for the same purpose. Although the inflexible prices and wage rates may thus be made to flex upward, they are not thereby made into flexible prices. Once they have been increased they then tend to stay up. Furthermore, once the war or defense period is over, the high inflexible prices and wage rate are likely to become a cause of depression unless the money supply is increased sufficiently to maintain the entire price structure at a level consistent with the increased level of the inflexibly priced commodities and wage rates.

It is important to recognize, too, that inflationary stresses may be built up in the price structure even before there have been any increases in commodity prices and in the absence of any increase in the supply of money (including credit). Transforming military output from small scale to large scale methods will often result in a reduction of real costs per unit. If there is no reduction in prices of the products, large profits will result in the industries concerned. Then labor organizations will demand higher wage rates. Indeed, higher wages may already have been paid in order to attract workers from other industries. With higher wages paid in the war goods industries, the pressure will be on to pay higher wages in other industries — and to raise the prices of goods produced by those industries in order to meet the increased costs. Thus, a powerful inflation spiral may get under way even in the absence of any increase in the supply of money or credit, and without any deficit financing by the government.

If price inflation — and perhaps subsequent price deflation and depression — is to be avoided as a result of our current defense program and war in Korea, it is essential that there be some price ceilings or other direct forms of price control to counteract the non-monetary pressures for inflation. Wherever demands for inflexibly priced goods or labor exceeds the supply available (at prices which have prevailed in the recent past) there may be need for such price and wage controls. Once a price or wage rate starts to rise above previously established levels the question arises. Are direct controls needed? The answer depends on the past behavior of the price or the wage rate in question. If past experience indicates that the price or wage rate does not readily decline in response to a *decline* of demand, then controls are probably needed in order to prevent the price from rising to too high a level.

Price ceilings on flexibly priced commodities are likely to do far more harm than good. Price fluctuations of such commodities ordinarily

have a very important function to perform in guiding production and in adjusting marketing and consumption to the available supplies. Government price controls are not likely to be anywhere nearly flexible enough to perform these functions efficiently. The relationships between prices of livestock and livestock feeds provide excellent examples. Price controls for such products were more detrimental than helpful during World War II, and there is little likelihood that the record will be better in the future unless the ceilings prove to be largely ineffective. Prices of most flexibly priced products can be held adequately in check through indirect controls without in any way interfering with the efficiency of the price system in directing the production and distribution of the commodities. There are few cases where price rises for such commodities are likely to be excessive relative to the money supply during the current defense period. Furthermore even if unusual demands should result in abnormal price rises, the flexible nature of the prices assures that once the abnormal demand is over the price will return to a normal level relative to the then current demands and the money supply. Meanwhile the high level of prices will have encouraged a needed increase in the production of the commodity.

Controls over wage rates should not, of course, prevent a rise in real wage rates consistent with increases in the over-all productivity of labor. Such increases in real wage rates can occur either through increases in money wages or through declining prices of the goods which wage earners purchase. However, this does not mean that wages after taxes—the take-home pay—can be increased. When a large and rapidly increasing proportion of our national product is required for military purposes the civilian goods and services actually available per worker must of necessity be decreased. Real income, in the sense of the amount of goods and services which an hour's wages after taxes will buy, must decrease. Resistance of wage earners to reductions in the amount of their take-home pay per hour of work is a major cause of inflationary pressures in the wage-price structure. If money income after taxes is not less per hour of work under a defense economy than under peace-time conditions, then prices must rise or else the workers must buy large amounts of defense bonds to make up the difference between government expenditures and the amount of taxes.

It should also be recognized that, in the net, money spent for bonds does not constitute real income available for consumption at some future date. For each bond which is redeemed at a future date, someone must pay taxes or else a future inflation will cancel out its value. On the average when we redeem bonds we are paying out of one pocket the same amount that we receive in the other pocket.

E. J. WORKING

FARM TANK HOLDINGS OF MILK

The customary way of holding milk on the farm has been in ten-gallon cans; the new way is in refrigerated tanks. First reported in the San Francisco-Oakland area in 1942, farm tanks are now used in Miami, Florida; Haddonfield, New Jersey; Hartford, Connecticut; Los Angeles, California, as well as in some other markets. In 1950, 500 out of 1,300 farms in the Los Angeles area used tanks for holding milk on the farm.

Milk from farm tanks is pumped to a tank truck, hauled to the milk plant, and then pumped to the holding vats. The driver of each tank truck is also a licensed weigher and tester approved by the agency regulating the handling of milk.

Some questions and answers relative to farm type holdings are shown below.

How much do farm tanks cost? The Safeway Stores in 1942 installed tanks on 13 Grade A farms in Marin, Sonoma, and Santa Clara counties in California. These farms produced 7,000 gallons in the surplus season, 5,000 gallons in the low period. The cost of each tank was about \$3,000. With transportation savings amounting to 6.3 cents per 100 pounds, farmers were able to pay for the tanks in about three months. The hauling rate to farmers on which the payments were calculated was then reduced to actual cost.

Costs of farm tanks and estimated number of years required to pay for them for members of the Connecticut Milk Producers Association are shown as follows:

Number of cans	Lbs. per tank	Cost per tank with compressor and controls	Plus 20 percent estimated cost for installation	Savings per day at 7 cents per 100 pounds	Estimated number of years to pay for tank	
					With dealer paying installation costs	With farmer paying installation costs
20 cans at 86¢ ..	1,720	\$2,100	\$2,520	\$1.204	4.8	5.7
30 cans at 86¢ ..	2,580	2,410	2,892	1.806	3.6	4.4
40 cans at 86¢ ..	3,440	2,560	3,072	2.408	2.9	3.5

Can accurate weights be secured? This question was answered for the San Francisco-Oakland, California, markets as follows:

"The weighing (measuring) and sampling of the milk are more accurate. The dairymen can actually see it done. Each tank is calibrated under the supervision of the sealer of weights and measures, and various installations have been checked by the State Department of Agriculture and found to be even more accurate than the usual method of emptying the cans into a weigh can and weighing. The principal reason is that there is no shrinkage between

the dairy and the fluid milk plant. The dairyman is paid for every drop of milk that is in the storage tank and does not lose what sticks to the sides of the ten-gallon can or is slopped or spilled as it is being dumped into the weigh tank. A recent check against public scale weights shows a variation of .25 percent — and to the advantage of the producers.”

The Connecticut Milk Producers Association answered this question as follows:

“The farmers who have installed the units are without exception delighted with the operation, and they believe they have made substantial savings due to the fact that the amount of milk they ship is accurately determined each day before they ship it. Also, the hauler leaves them a duplicate of the butter-fat sample each day, which is certainly worth something because of the controversies which often arise on this score. Now, at least, the dealer and the laboratory to which the farmer may take this sample to have it tested are both testing the same milk.”

Is washing the farm tank difficult? According to a report of Woodruff in the Green Valley Farms, washing farm tanks is a simple job:

“The tank truck driver rinses the tank out with water. This rinse is followed later by a thorough scrubbing in which warm water and a detergent are used. This is done by the farmer. Just before the equipment receives milk, it is sanitized by brushing a disinfectant over the stainless steel surfaces. The entire cleaning operation is completed in a matter of minutes.”

How does the quality of milk received from farm tanks compare with that received in cans? Bulk milk held in tanks at low temperatures is much higher quality. This is shown by quality comparison:

QUALITY COMPARISON BETWEEN CAN MILK AND BULK
MILK RECEIVED BY GREEN VALLEY FARMS^a

Date	Classification of raw milk in pasteurizing plant	Temperature °F.	Plate Count
April 10	Dumped can milk	53	200,000
April 11	Dumped can milk	45	160,000
April 10	Bulk milk in tanker	39	Under 30,000
April 11	Bulk milk in tanker	38	Under 30,000

^a *American Milk Review*, July, 1951, pp. 6 to 8.

How can low quality milk be kept from contaminating high quality milk? The truck driver has to act in the same capacity as a weigher

¹ From a speech by Richard W. Blackburn given at the Dairy Marketing Conference held at the University of Illinois, January 28, 1947.

² From a letter dated October 23, 1951, from Ken Geyer, General Manager, Connecticut Milk Producers Association. One large dealer in the market agreed to pay 5 cents per 100 pounds for milk received in tanks because of reduced receiving costs. This amount (5 cents), plus a 2-cent per 100-pound cost for cans, made a saving of 7 cents per 100 pounds.

³ *American Milk Review*, July, 1951, pp. 6 to 8.

at a receiving plant and reject low quality milk. In addition to being a licensed weigher and tester, the driver must also know the difference between a high quality and low quality milk. Poor flavor tends to increase with warmth.

What types of farm tank holdings are there? There are two types, cold-wall and thermos. In the Los Angeles area which has the most farm tanks, about half of each type makes up the total use. Many of the tanks have thermometers hooked up with charts to record the temperature variations. Some of the tanks are the same as those used in the milk plant for holding milk.

What are the principal advantages in the use of farm tank holdings?

1. The quality of milk is improved because the milk in a refrigerated tank can be held at 36° to 38°, thereby preventing the growth of bacteria. The use of cans, which are very hard to keep clean, tends to promote the growth of bacteria.

2. The cost of transporting and receiving milk is reduced. Safeway reported a saving of 6.27 cents per 100 pounds. Haddonfield, New Jersey, was lower with 5 cents per 100 pounds. Hartford, Connecticut, reported 7 cents per 100 pounds.

What are the principal disadvantages in the use of farm tank holdings?

1. When cans are used, a bad can of milk can be rejected at the plant without affecting the quality of milk in other cans. In a farm tank all milk would be affected by bad quality, and it might make it necessary for the driver to reject the entire tankful of milk.

2. A farm tank with adequate refrigeration is fairly expensive.

3. When an area is converted from can shipments to tank shipments, a dealer must be equipped to receive milk from the farm by both methods.

R. W. BARTLETT

Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926 = 100 to 1935-39 = 100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914 = 100 to 1935-39 = 100 by multiplying by .8834. ⁴ New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. ⁹ Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. ¹⁰ Federal Reserve Bulletin of Federal Reserve Board. ¹¹ Preliminary estimate. ¹² Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹³ Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.

H. P. Rusk

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TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production ¹⁰
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-39
1935.....	99	104	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	302	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	248	275	207	383	389	189	303	351	192
1949.....	192	218	217	200	352	362	181	304	325	176
1950.....	200	224	228	204	350	360	176	330	372	200
1950 Aug.	206	234	240	205	383	328	167	335	394	209
Sept.	210	237	242	208	447	298	143	342	403	211
Oct.	210	234	236	208	545	549	264	344	416	216
Nov.	213	242	240	210	511	429	204	346	415	215
Dec.	218	247	252	212	417	371	175	359	426	218
1951 Jan.	223	256	261	217	378	393	181	356	424	221
Feb.	228	267	277	220	281	307	140	358	430	221
Mar.	228	268	276	224	303	376	168	362	435	222
Apr.	228	266	278	226	313	395	175	366	433	223
May	227	263	274	226	319	390	173	368	428	223
June	225	261	270	225	323	348	155	370	434	222
July	223	255	269	225	398	497	221	370	423	213
Aug.	221	251	271	225	450	393	174	372	430	218
Sept.	220	249	270	225	514	394	175	372	437	219

TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			Dec. 1950	Current months, 1951		
	1933-39	1950	1951		Oct.	Nov.	Dec.
Corn, bu.....	\$.66	\$1.35	\$1.67	\$1.53	\$1.67	\$1.67	\$1.77
Oats, bu.....	.31	.76	.87	.88	.82	.96	.96
Wheat, bu.....	.86	2.02	2.24	2.12	2.21	2.29	2.38
Barley, bu.....	.62	1.20	1.36	1.32	1.32	1.39	1.39
Soybeans, bu.....	.90	2.49	2.95	2.80	2.68	2.83	2.89
Hogs, cwt.....	8.52	18.19	20.38	17.70	20.60	18.20	17.90
Beef cattle, cwt.....	7.88	24.54	30.56	27.70	31.00	30.20	29.00
Lambs, cwt.....	8.36	25.06	31.66	28.10	29.10	28.60	28.70
Milk cows, head.....	58.00	216.67	267.50	230.00	280.00	280.00	275.00
Veal calves, cwt.....	8.66	28.01	33.53	30.50	33.30	32.30	32.00
Sheep, cwt.....	3.58	10.52	16.07	12.50	14.00	13.10	13.30
Butterfat, lb.....	.27	.58	.66	.60	.66	.67	.72
Milk, cwt.....	1.68	3.46	4.15	4.05	4.30	4.50	4.55
Eggs, doz.....	.19	.31	.42	.53	.49	.49	.43
Chickens, lb.....	.15	.23	.27	.23	.24	.22	.23
Wool, lb.....	.25	.50	.80	.63	.56	.56	.54
Apples, bu.....	1.08	2.24	2.04	2.30	1.80	2.10	2.10
Lfay, ton ¹³	9.39	20.77	21.08	22.40	19.60	20.90	21.70

¹⁻¹² For sources of data in tables see preceding page.

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Articles in This Issue

	PAGE
The Outlook for Hayseed Prices and Supplies — W. M. HERR.....	1269
Hedging Cattle Feeding Operations — T. A. HIERONYMUS, F. S. SCOTT, and W. J. WILLS.....	1272
Agricultural Co-Ops and the New Revenue Act — N. G. P. KRAUSZ.....	1276
Condensery Prices in Different Regions Tend to Be Close to Each Other and to Change Together — R. W. BARTLETT.....	1278
Problems in the Sale of Small Consignments of Livestock — W. J. WILLS.....	1282
Joint Tenancy — Is It Taxwise? — N. G. P. KRAUSZ.....	1284

THE OUTLOOK FOR HAYSEED PRICES AND SUPPLIES

The 1951 United States production of the six major hayseed crops was smaller than the 1950 production by about 27 percent and about the same as the 1940-49 average. Production of alsike clover, lespedeza, and timothy was lower than during the 1940-49 period (Table 1).

The decline in production from 1950 was due principally to fewer acres harvested, particularly in the cases of red clover and sweet clover. The United States acreage of red clover decreased by 931,500 acres with the sharpest reduction through the Midwestern states but small acreage increases in the East. The United States acreage of sweet clover seed decreased by 202,800 acres, or about 40 percent. The decline in timothy

TABLE 1. — UNITED STATES PRODUCTION OF THRESHER-RUN SEED (BUSHELS)*

	1940-49	1950	1951
Red clover.....	1,608,120	2,787,100	1,789,900
Alsike clover.....	335,340	315,100	309,600
Alfalfa.....	1,352,080	2,154,700	2,055,300
Lespedeza.....	192,011	175,870	148,390
Sweet clover.....	693,510	1,527,300	903,400
Timothy.....	1,262,960	1,508,000	976,500
Total.....	5,444,321	8,468,070	6,183,090

* 1951 Annual Summary of Crop Production, Crop Reporting Board, BAE, USDA.

Articles in *Illinois Farm Economics* are based largely upon findings of the Agricultural Experiment Station.

TABLE 2. — UNITED STATES SUPPLIES OF FIELD SEEDS^a
(PRODUCTION PLUS CARRY-OVER OF CLEAN SEED IN THOUSANDS OF POUNDS)

	1940-49	1950	1951 (Indicated)
Red clover.....	100,222	139,893	133,551
Alsike.....	19,224	16,903	17,314
Alfalfa.....	76,558	114,475	123,459
Lespedeza.....	171,767	186,883	130,498
Sweet clover.....	41,099	73,698	68,878
Timothy.....	75,532	63,936	72,184
Total.....	484,402	595,788	545,884

^a 1951 "Seed Crops" reports, USDA, BAE.

TABLE 3. — PRICES RECEIVED FOR SPECIFIED SEEDS BY ILLINOIS GROWERS
(PER BUSHEL)^a

	1951	1950	Average price 1945-49
Alsike.....	\$21.80	\$18.90	\$20.56
Red clover.....	19.80	17.70	24.50
Sweet clover.....	6.80	7.60	8.02
Timothy.....	4.50	4.60	4.73
Lespedeza.....	8.50	4.40	5.82
Redtop ^b	24.00	36.50	26.62

^a "Agriculture Prices," BAE, USDA.

^b Seed Crops, BAE, USDA, "Miscellaneous Seed Estimates," December 21, 1951. The price of redtop refers to the season's average price per 100 pounds.

seed production is the result of both reductions in acreage and yield per acre, although acreage reductions in the Midwest, particularly Iowa and Missouri, seem to be the major cause.

The drop in production from 1950 is partially offset by the large carry-over of these seeds. Thus, on a clean seed basis the following figures of total supplies available indicate that the 1951 supply is 12 percent larger than the 1940-49 average and nine percent smaller than the 1950 supply (Table 2).

Average prices paid to growers are shown for November, 1951, November, 1950, and the average November price for the five-year period, 1945-49 (Table 3).

Prices paid to growers were higher for alsike, red clover, and lespe-deza and lower for sweet clover, timothy, and redtop than in 1950. All prices declined from the average period except alsike and lespe-deza.

Farmers may normally expect prices of seed to rise seasonally from harvest time to sowing time. The seasonal price increase in Illinois has been found to be, over the period from 1934-1950 and excluding the war and price control years of 1942-1946, 49.9 percent for sweet clover, 23.3 percent for red clover, and 41.9 percent for timothy. These figures indicate the importance of buying seed early and ahead of the peak demand in the spring.

TABLE 4. — PRODUCTION OF RED CLOVER AND REDTOP SEED IN ILLINOIS AND THE UNITED STATES

	1940-49	1950	1951
	(Bushels of thresher-run seed)		
Total United States production of red clover...	1,608,120	2,787,100	1,789,900
Illinois production of red clover.....	218,200	382,000	135,000
Percent Illinois production is of total.....	13.6	13.7	7.5
	(Pounds of clean seed)		
Total United States production of redtop.....	14,690,000	13,400,000	7,800,000
Illinois production of redtop.....	12,060,000	4,900,000	3,800,000
Percent Illinois production is of total.....	82.1	36.6	48.7

The current emergency and the resultant economic situation will probably result in relatively less attention being paid to the harvesting of these seeds in 1952 than a year or two ago when interest in grass and forage crops was high. Attention will be concentrated on the production of food and feed crops; especially as the price of these crops rises relatively to the price of forage seeds. This is the same situation as was described in January, 1951, by G. C. Edler, In Charge of Field Seed Statistics, Bureau of Agricultural Economics.¹

At the same time there are forces which also indicate a decrease in the demand for seed. Some of these factors which should be considered include: (1) acreages of forage will probably decrease as food and feed crop prices increase; (2) the cattle cycle is nearing its peak: as cattle numbers decrease less forage will be needed; (3) exports are declining and imports are increasing; this has been the result of recovery of agricultural production in Europe, devaluation of European currencies, and in recent years, large crops in Canada; (4) stocks on hand by dealers, farmers, and government in the United States have been at record levels in recent years.

Over the ten-year period, 1940-49, Illinois has been the leading state in the production of red clover seed and redtop seed. In the past two years, production in Illinois of redtop seed has decreased from the ten-year period; for red clover the trend is obscure (Table 4). However, the reduction in the production of red clover seed in Illinois in 1951 was the result of acreage reduction; the yield level, while under 1950, was just above the average for the ten-year period. The reduction in acreage from the 1950 level was about 60 percent and from the ten-year average, 39 percent. Such large changes may suggest a downward trend in red clover seed production in Illinois. This is especially true when considering the advantage which growers in the northwestern states have in obtaining yields from three to six times higher than the Illinois grower.

W. M. HERR

¹ "Agricultural Situation," January, 1951, USDA, p. 6.

HEDGING CATTLE FEEDING OPERATIONS

Cattle feeding has long been recognized as a risky business. Cattle feeders frankly recognize that they are speculating in cattle prices. Profits from cattle feeding come from two sources: efficient feeding and skillful speculating. In years in which cattle prices decline appreciably even the most efficient feeders likely lose money and in years in which cattle prices increase appreciably even the poorest feeders make money. Farmers who are interested in feeding profits alone have often expressed a dislike for the need to speculate and a desire for a system of shifting risks.

It is doubtful that cattle feeders as a group would gain if cattle feeding risks were eliminated. Few object to taking a chance if the odds look very good and to eliminate the risk of losses would also eliminate speculative profits. The high risks keep many farmers from feeding cattle. If risks are eliminated a part of the profits will also disappear.

The risks in cattle feeding are of two kinds: (1) changes in feed costs and (2) changes in the relationship of fat cattle and feeder cattle prices. At the beginning of a cattle feeding operation the feeder must calculate the amount that he is willing to pay for feeder cattle and the value of the saleable feed he must set aside for the operation. The price that he will pay and the amount of feed he is willing to set aside depend upon the price that he expects to get for fat cattle. The cost of feed can be rather accurately determined at the beginning of the operation. The big risk is the relationship of the purchase and sale price of the cattle. It seems worth while to explore the possibility of hedging this relationship.

Hedging. One method that is used extensively for shifting price risks is hedging in futures markets. There are organized futures markets for several commodities — wheat, corn, oats, rye, grain sorghums, mill-feeds, soybeans, soybean oil, soybean meal, cotton, lard and others. Individuals and firms engaged in the marketing of these commodities are able to materially reduce the risks of losses resulting from unfavorable price changes by hedging. A hedge is a sale or purchase of a futures contract against a previous purchase or sale of an equal quantity of a cash commodity. Because cash and futures prices tend to move up and down together, gains and losses in the cash position are largely offset by opposite gains and losses in the futures position.

Not all cash positions can be hedged in futures markets for the same commodity as corn may be in corn futures. When futures markets do not exist or are inadequate, cash positions are sometimes hedged in other commodity futures as alfalfa meal in corn futures, linseed meal in soybean meal futures, etc. These cross hedges are at times useful in reducing risks. Because there are no futures markets for cattle, we must look for

appropriate cross hedges as a means of reducing price risks in feeding cattle.

Hedging slaughter cattle in corn futures. A cattle-feeding program was selected against which different possible hedges were checked. This program was to purchase good to choice steer calves in August, carry them through the winter on roughage with small quantities of grain, full feed them on summer pasture and sell them in early September at weights of 900 to 1,100 pounds. It is a fairly typical corn-belt feeding program.

The objective of the hedging program was to fix the margin between the fat cattle and feeder steer prices at the time of the purchase of the feeders. This objective assumes that the margin or spread between feeders and fat cattle at the time of purchase is satisfactory and if the difference between the two can be preserved the feeding operation will be successful.

The problem in preserving this margin is to effectively extend the finished cattle prices for a period of about one year. If the price of some commodity moves closely parallel to that of fat cattle it can be sold to obtain the desired result. In entering into the feeding operation the producer buys cattle. To offset this he needs to make a short sale such that if the finished cattle price goes up he will lose a corresponding amount on the short sale and if the cattle price goes down he will make a corresponding amount.

In this study corn was assumed sold in the Chicago futures market. The quantity of corn to be sold was calculated by dividing the annual average price of choice cattle by the annual average price of number two corn Chicago. This ratio established the number of bushels of corn to be sold against each *prospective* 100 pounds of finished beef.

Hedges (or short sales) were successively placed in December, May, July, and September corn futures. They were removed (bought back) during the first half of the month preceding delivery, that is, December short sales were purchased between November 1 and 15, etc.

Two periods were used in the study, August 1937 to September 1941 and August 1947 to September 1950 for a total of seven years. Because of the limitations imposed by the price quotations good steers were used in the 1937-41 period and choice steers in 1947-50.

The results of the feeding operations unhedged are shown in Table 1 and hedged in Table 2. The net results as shown are unfavorable to a policy of hedging. During 1937-41 the net loss from speculating was 57 cents per cwt. and in 1947-50 the loss was 64 cents. During 1937-41 the net hedging loss was \$2.52 and during 1947-50, \$3.17. But in the long run the price of fat cattle must bear a fairly constant average relation to the price of feeds which are most nearly represented by corn.

TABLE 1. — FAT CATTLE PRICE CHANGES DURING THE FEEDING PERIOD
(DOLLARS PER CWT. OF CATTLE)

Feeding year	Price at time of feeder purchase	Sale price	Profit or loss	
1937-38.....	13.97	10.03	Loss	3.94
1938-39.....	9.69	10.20	Profit	.51
1939-40.....	9.03	11.15	Profit	2.12
1940-41.....	10.82	11.56	Profit	.74
1947-48.....	32.63	38.95	Profit	6.32
1948-49.....	39.88	29.50	Loss	10.83
1949-50.....	28.13	32.00	Profit	3.87

TABLE 2. — EFFECT OF HEDGING OPERATIONS ON FEEDER AND FAT CATTLE SPREADS
(DOLLARS PER CWT. OF CATTLE)

Feeding year	Cattle	Corn	Net spread
	Profit or loss	Profit or loss	
1937-38.....	Loss.....3.94	Profit.....3.47	Loss......47
1938-39.....	Profit......51	Profit.....1.17	Profit.....1.68
1939-40.....	Profit.....2.12	Loss.....3.10	Loss......98
1940-41.....	Profit......74	Loss.....3.49	Loss.....2.75
1947-48.....	Profit.....6.32	Profit.....2.41	Profit.....8.73
1948-49.....	Loss.....10.83	Profit.....4.48	Loss.....5.90
1949-50.....	Profit.....3.87	Loss.....9.87	Loss.....6.00

The only portion of the hedging period that is affected by usual seasonal price variation is the part that extends past a complete year or the August to September period. September corn typically declines in price during this period¹ and the best grades of slaughter cattle typically increase. During this overlap period the hedging operation is long cattle and short corn and so should, in the long run, show a net hedging profit.

While interesting, net gains and losses are not a good test of a hedge; the purpose of the hedge is to reduce the profits and losses toward zero. The test of the hedge, then, is the accuracy with which the corn profits and losses offset the cattle profits and losses. The hedges showed a marked offsetting tendency. Profits and losses on corn were opposite profits and losses on cattle in five of the seven years. The exceptions were 1938-39 and 1947-48. During these two years both cattle and corn showed a profit. During these two years the hedging operation failed even though it increased the profits.

A second test of the effectiveness of the hedge is the size of the deviations from zero profit and loss. In 1937-41 the average deviation unhedged was \$1.83 while hedged it was \$1.47. In 1947-50 the average deviation unhedged was \$7.01 while hedged it was \$6.88. If we adjust the prewar average cattle price to the 1947-50 level we can put all seven years together. Adjusted thus the deviations were as follows:

¹ Working, Holbrook, "Theory of the Inverse Carrying Charge in Futures Markets," *Journal of Farm Economics*, Feb. 1948.

<i>Year</i>	<i>Deviations unhedged</i>	<i>Deviations hedged</i>
1937-38.....	-\$12.21	-\$1.26
1938-39.....	+ 1.58	+ 5.21
1939-40.....	+ 6.57	- 3.04
1940-41.....	+ 2.29	- 8.53
1947-48.....	+ 6.32	+ 8.73
1948-49.....	- 10.83	- 5.90
1949-50.....	+ 3.87	- 6.00
Average.....	\$ 6.24	\$5.52

The average deviation hedged was about 88 percent as large as unhedged. The risks of unfavorable price changes of calamitous size were reduced by hedging. There were two very poor cattle feeding years, 1937-38 and 1948-49. The hedge was a major help in both years. It would have made it possible to avoid ruinous losses. The two years in which the hedge showed the greatest losses were both years in which we entered war situations and the price of corn reacted much faster than did the price of cattle.

The conclusion is that, while helpful to a degree, the hedge of fat cattle in corn is not particularly satisfactory when used as it was in the study.

One possible alternative to the hedging program used is that of applying the hedge selectively. By this is meant the short sale of corn when the hedge seems most likely to work to the advantage of the hedger and when the danger of cattle price declines seems greatest. Such a program is hard to apply, both experimentally and in practice; experimentally because the investigator cannot fully eliminate the advantage of hindsight and in practice because it tends to get shifted from a hedging program to one of separately speculating in corn futures.

During the months in which corn prices typically decline and cattle prices increase the hedge can be expected to show a profit. When corn and fat cattle prices move in the same direction the hedge tends to work as a hedge should with neither profits nor losses. When corn prices typically increase and cattle prices decline the hedge can be expected to show a loss. The purpose of hedging selectively is to avoid these typical loss periods.

On the basis of typical seasonals (see University of Illinois Circular 516, Bulletin 541, and Working, *op. cit.*) the hedge tends to show a profit during August to September, and February to March. The hedge worked as a hedge should during September to October, October to November, November to December, June to July, and July to August. It was of no help during January to February and showed a loss during December to January, March to April, April to May, and May to June. To recapitu-

late: the hedge tended to work as a hedge should during five of the 13 months, showed a profit in three, a loss in four, and was of no help in one. The application of selective hedging would direct the removal of the short corn position from about March 1 to June 15. The cattle would be carried unhedged during this period.

The selective hedging program should be varied on the basis of expected departures from "normal" seasonals. Such a program involves greater risks than one of continuous hedging. Major changes in cattle price result from changes in consumer purchasing power and the operation would be vulnerable to such changes during the unhedged period. However, it is a short period and therefore more predictable.

Other hedges. Lard futures, wheat futures, and certain groups of industrial stocks were explored as hedging possibilities and found less satisfactory than corn.

T. A. HIERONYMUS
F. S. SCOTT
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AGRICULTURAL CO-OPS AND THE NEW REVENUE ACT

The new revenue act (1951) imposed more strings on farm cooperatives. One string extracted an exemption from income tax. Earnings placed in reserve or surplus which are not paid out, or not allocated and disclosed to patrons, are taxable in 1952 (does not apply to tax year 1951). In other words, an agricultural co-op which qualifies for the income tax exemption may now deduct only the following amounts from gross income:

- a. Amounts paid as dividends on capital stock.
- b. Amounts paid, or allocated and disclosed, on earnings from non-patron business such as investment income, rents received, and income from business with the U.S. Government.
- c. Amounts paid, or allocated and disclosed, on earnings from patron business.

To remain exempt under Section 101(12) of the Internal Revenue Code, a co-op still has to meet the same requirements as before the new revenue act:

- a. It must be a farmers', fruit growers', or like association organized and operated on a cooperative basis for the purpose of marketing products or purchasing supplies and equipment for its members. ("Supplies" and "equipment" as used in the Revenue Code includes groceries and all other goods and merchandise used by farmers in the operation and maintenance of a farm or farmer's household.)

b. Substantially all of its stock (other than preferred non-voting and non-participating stock) must be owned by producer-members marketing products or purchasing supplies through the cooperative.

c. Products of non-members may not exceed 50% in value of the co-operative's total marketing.

d. Purchases for non-members may not exceed 50% of the cooperative's total purchases, and purchases for persons who are neither members nor producers may not exceed 15% of the cooperative's total purchases.

e. The dividend rate on capital stock may not exceed 8%.

f. Non-members must be treated the same as members in the allocation of patronage dividends or refunds. For example, cooperative dairy companies engaged in collecting and selling milk may distribute dividends on the basis of the quality of milk or of butterfat in the milk furnished by producers. However, as to non-members, this requirement may be complied with if the allocated amount is made applicable toward the purchase price of a share of stock or of a membership in the association.

If an exempt co-op becomes taxable on profits not allocated, it is subject to normal corporation tax, surtax and capital gains tax. The excess profits tax will not apply.

No tax is payable on reasonable reserves set aside for capital improvements such as buildings and equipment, or a prospective expansion, if such reserves are allocated and disclosed to patrons. This applies only to additions to reserves after 1951. Therefore, any reserves existing on January 1, 1952 (or at the beginning of the fiscal year after January 1, 1952) are not required by the new revenue act to be allocated retroactively.

Reserves for bad debts and depreciation need not be allocated since these items are allowable as expense deductions. However, reserves for a decline in inventory values are not deductible items and must be allocated.

Allocations may be made on or before the 15th day of the ninth month after the close of the tax year. *Payments or allocations must be in cash, merchandise, capital stock, revolving fund certificates, retain certificates, certificates of indebtedness, letters of advice, or in some other form that makes known to each patron the dollar amount of the dividend or allocation.* A form in writing permits the patron to use it when reporting such income on his income tax return.

If not actually paid, a liability must be created by the directors before dividends are excludable from gross income. This treatment is the same accorded non-exempt co-ops.

Although earnings which are allocated are not taxable to the co-op, they are taxable when paid or disclosed (using one of the written forms

listed above) to the patron or shareholder. When grain is marketed, dividends received by the farmer are treated as additional proceeds from the sale of grain. Dividends received resulting from the purchase of equipment reduce the basis of the equipment thereby reducing depreciation allowed each year. Dividends received resulting from the purchase of personal items such as a stove are not taxable and such items are not depreciable. However, the basis of the stove is reduced and this would result in a larger gain if the farmer sold the stove for a profit.

Agricultural co-ops which do not comply with the Revenue Code, and those who prefer to remain non-exempt, continue to be taxable on dividends on capital stock (also taxable to the stockholder), on reserves not allocated, and on income not attributable to the normal operations of buying and selling from and to members. This differs from the exempt co-op in that there is double taxation on dividends paid on capital stock (both the co-op and the stockholder are taxed), and income from non-patronage operations (rentals, capital gains, business with government) is taxable even though allocated.

In 1951 and succeeding years, another provision in the new act requires co-ops to file information returns when patronage dividends allocated or paid amount to \$100 or more. The report is made on a calendar year basis. Such returns are not required of certain insurance companies and from co-ops or non-profit corporations engaged in rural electrification.

N. G. P. KRAUSZ

CONDENSERY PRICES IN DIFFERENT REGIONS TEND TO BE CLOSE TO EACH OTHER AND TO CHANGE TOGETHER

Twenty-seven federal order markets¹ use the average price of 18 condenseries in the Chicago area as one of their basic formulas for arriving at the Class I price for milk. Two other federal order markets use this average in combination with prices at five local condenseries.

Because of their wide use, one may logically raise the question: Are Chicago condensery prices representative of these prices in other areas of the United States? A comparison of condensery prices in the Chicago area with those of other regions, and in the United States indicates:

1. *Changes in condensery prices in the Chicago area tend to be ac-*

¹In September, 1951, those markets were: Chicago, Cincinnati, Cleveland, Columbus, Dayton-Springfield, Detroit, Kansas City, Knoxville, Lima, Louisville, Memphis, Milwaukee, Minneapolis-St. Paul, Muskogee, Nashville, North Texas, Oklahoma City, Paducah, Philadelphia, Puget Sound, Rockford-Freeport, South Bend-LaPorte, Toledo, Topeka, Tri-State, Tulsa and Wichita. St. Louis and Springfield, Missouri, add the prices of five local condenseries to those of the 18 condenseries in arriving at this basic formula price.

accompanied by similar changes in each of seven major regions and in the United States; and

2. Differences between Chicago condensery prices and those of other regions have been relatively small.

Condensery prices in one region are highly competitive with prices of other dairy products and with those paid for condensery milk in other regions. While condensery milk constitutes only about one-eighth of all milk manufactured, in the surplus producing areas milk for condensery purposes and that used in butter or cheese are easily interchangeable. Hence, if the price of one product falls materially below what it normally has been in relation to another product, diversion of milk from the low-priced product to a higher-priced one tends to restore the usual price relationships.

Changes in prices of condensery milk in the Chicago area have been closely associated with these prices in each of the seven major regions where condensery milk is produced. Between 1920 and 1950 the coefficients of correlation between these price series were as follows:

Chicago and Middle Atlantic.....	$r = .9911$
Chicago and South Atlantic ¹	$r = .9855$
Chicago and East North Central.....	$r = .9992$
Chicago and West North Central.....	$r = .9984$
Chicago and South Central ²	$r = .9921$
Chicago and North West.....	$r = .9919$
Chicago and South West.....	$r = .9838$
Chicago and United States.....	$r = .9986$

Since a perfect correlation is equal to 1.00, this indicates the close relationship which existed between condensery prices for this period in each of the seven major regions in the United States with Chicago condensery prices.

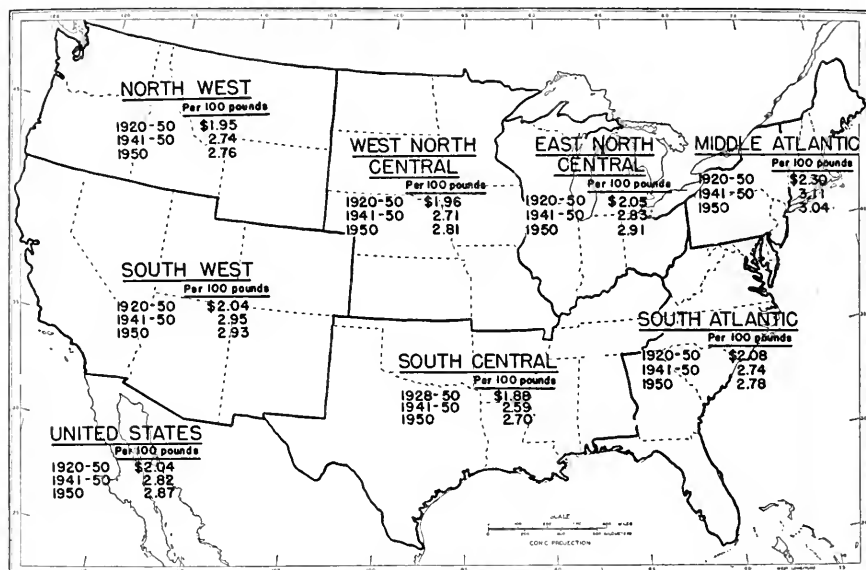
Prices of Chicago condensery milk not only are highly competitive with condensery prices in other regions but also tend to be closely associated with changes in United States prices of farm products. From 1920 to 1950 the coefficient of correlation between these two price series was .973. This high correlation indicates clearly that general changes in supply and demand factors such as feed and labor, consumer income and population, are reflected by changes in condensery prices as well as by changes in all farm prices.

Condensery prices in different regions not only tend to change together; they also tend to be close to each other, the principal variations

¹ Data for 1924-27 not included.

² Data for 1920-27 not included.

FIG. 1. — AVERAGE PRICES PAID PRODUCERS AT CONDENSERIES FOR 3.5 PERCENT MILK, BY REGIONS AND FOR UNITED STATES, 1920-1950, 1941-1950 and 1950



being caused by differences in location. From 1941 to 1950 average condensery prices in the Middle Atlantic States were 27 cents per 100 pounds above the Chicago average, while condenseries in the South Central States paid producers 25 cents less than this average (Table 1 and Figure 1). The two principal factors causing these differences were:

1. *Costs of transporting evaporated milk from surplus-producing to shortage areas.* In 1951 it cost 39 cents (in carlots) to transport 100 pounds of whole milk manufactured into evaporated from a Chicago condensery to Rochester, N. Y.¹ This cost was somewhat more than the amount (27 cents) which the condensery price in the Middle Atlantic States from 1941-50 exceeded that in the Chicago area. Freight costs for hauling evaporated milk in 1951 were somewhat higher than the average of those for 1941 to 1950.

2. *Extra costs to manufacturers for procuring milk in areas of sparse production or for manufacturing a low volume per plant.* Production of canned milk requires heavy capital expenditures. Hence usually a large volume of milk is necessary to keep the unit costs of operation low. In the East North Central States milk production in 1950 averaged 579 pounds per crop acre. This compared with 206 pounds per crop acre in the South Central States.

¹ Data obtained from a Chicago manufacturer of evaporated milk.

TABLE 1.—AVERAGE PRICES PAID MILK PRODUCERS AT CONDENSERIES BY REGIONS AND UNITED STATES, 1920-50^a

Year	Middle Atlantic	South Atlantic	East North Central	West North Central	South Central	North Western	South Western	United States	Chicago condensery price ^b
	(Price per 100 pounds of 3.5 percent milk)								
1920.....	3.34	3.07	2.92	2.80	.....	2.68	2.69	3.01	2.94
1921.....	2.20	2.17	1.87	1.81	.....	1.81	1.78	1.93	1.87
1922.....	1.97	1.93	1.69	1.68	.....	1.71	1.64	1.70	1.69
1923.....	2.59	2.60	2.20	2.09	.....	2.12	2.05	2.21	2.23
1924.....	2.08	.....	1.79	1.77	.....	1.76	1.76	1.83	1.79
1925.....	2.22	.....	1.98	1.87	.....	1.91	1.85	1.97	1.96
1926.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1927.....	2.30	.....	1.96	1.88	.....	1.86	1.85	1.97	1.96
1928.....	2.47	.....	2.12	2.01	.....	1.88	1.96	2.12	2.15
1929.....	2.34	2.31	2.15	2.05	2.03	1.91	1.94	2.11	2.18
1930.....	2.30	2.09	2.08	1.94	1.94	1.92	1.92	2.04	2.04
1931.....	2.05	1.75	1.67	1.64	1.66	1.57	1.63	1.67	1.62
1932.....	1.45	1.21	1.19	1.16	1.17	1.11	1.16	1.18	1.20
1933.....	1.15	.91	.90	.88	.88	.84	.83	.89	.88
1934.....	1.18	.96	1.01	.93	.91	.89	.88	.98	1.00
1935.....	1.36	1.09	1.17	1.10	1.05	1.03	1.10	1.14	1.12
1936.....	1.51	1.30	1.36	1.29	1.22	1.27	1.38	1.35	1.30
1937.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1938.....	1.68	1.51	1.57	1.51	1.43	1.54	1.63	1.56	1.54
1939.....	1.68	1.60	1.57	1.53	1.43	1.50	1.66	1.57	1.57
1940.....	1.40	1.36	1.25	1.20	1.14	1.19	1.29	1.25	1.26
1941.....	1.41	1.33	1.24	1.19	1.14	1.20	1.28	1.25	1.25
1942.....	1.49	1.49	1.37	1.34	1.30	1.39	1.48	1.38	1.35
1943.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1944.....	1.94	1.82	1.84	1.70	1.62	1.78	1.82	1.81	1.85
1945.....	2.16	2.07	2.06	1.97	1.85	2.15	2.28	2.08	2.07
1946.....	2.73	2.60	2.61	2.50	2.43	2.55	2.78	2.61	2.53
1947.....	2.77	2.51	2.64	2.53	2.48	2.63	2.92	2.66	2.64
1948.....	2.75	2.53	2.59	2.53	2.43	2.68	2.92	2.60	2.60
1949.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1950.....	3.69	3.21	3.42	3.25	3.08	3.20	3.43	3.36	3.45
Average: 1920-50 ^c	4.11	3.29	3.49	3.34	3.19	3.24	3.46	3.46	3.45
Average: 1941-50.....	4.53	3.72	3.97	3.72	3.51	3.63	3.91	3.90	3.97
Average: 1941-50.....	3.36	2.73	2.81	2.70	2.62	2.82	2.97	2.81	2.86
Average: 1941-50.....	3.04	2.78	2.91	2.81	2.70	2.76	2.93	2.87	2.95
Average: 1920-50 ^c	2.30	2.08	2.05	1.96	1.88	1.95	2.04	2.04	2.04
Average: 1941-50.....	3.11	2.74	2.83	2.71	2.59	2.74	2.95	2.82	2.84

^a Data compiled by the Bureau of Agricultural Economics, United States Department of Agriculture.^b Data from 1920 to 1924 from Illinois Agricultural Experiment Station Bulletin 269, Table G; Page 538; data from 1925 to 1939, Wisconsin State Department of Agriculture, Bulletin 249; and data from 1940 to 1950, the 18 condensery price as reported by the Chicago Federal Milk Market Administration.^c Data not included for South Atlantic States for 1924 to 1927, and for South Central States for 1920-27.

Condensery prices in the East North Central States and in the United States have been practically the same as Chicago condensery prices. From 1920 to 1950 prices for both Chicago and the United States averaged \$2.04 per 100 pounds, while those in the East North Central States averaged one cent more (\$2.05). From 1941 to 1950 the 18 condensery price in the Chicago area averaged 25 cents above that in the South Central area; 13 cents above the West North Central price; 10 cents above that in the North West States; two cents above the United States average; and one cent per 100 pounds of milk above the price received by producers in the East North Central States. Only two areas, the Middle Atlantic and the South West, had a condensery price from 1941-50 higher than the Chicago 18 condensery price. Both of these areas import large quantities of evaporated milk from the Midwest.

R. W. BARTLETT

PROBLEMS IN THE SALE OF SMALL CONSIGNMENTS OF LIVESTOCK

There was an article in the July 1951 *Illinois Farm Economics* on how Illinois livestock is marketed. One of the items brought out in that article was that in southern Illinois nearly 70 percent of the hog consignments were in lots of 10 or less; in western Illinois 47 percent and in northwestern Illinois 41 percent were in lots of 10 or less. In southern Illinois 90 percent of the cattle consignments were in lots of five or less; in western Illinois 81 percent and in northwestern Illinois 85 percent of the consignments were in consignments of five or less.

Even when total marketings are small the producer markets livestock more than once (Table 1).

With small numbers of livestock going to market at one time many marketing problems arise.

Choice of market. If a producer has a full truckload of livestock he can usually find a trucker to haul his livestock to any market he chooses and any day of the week he wants to go to market. But if a

TABLE 1. — AVERAGE NUMBER OF TIMES ILLINOIS FARMERS FROM THREE AREAS MARKETING CATTLE AND HOGS FOR SPECIFIED TOTAL SALES, 1950

Total number marketed	Southern	Western	Northwestern
		<i>Cattle</i>	
1-5	1.7	1.6	1.7
16-20	5.2	3.7	5.6
Over 30	4.1	4.4	5.6
		<i>Hogs</i>	
1-10	1.5	1.4	1.5
21-30	3.8	4.2	2.5
Over 60	5.2	4.1	5.3

producer has less than a truckload he must wait until other farmers in the area have livestock to market and sell when and where they want to sell. This has probably been one of the reasons for the popularity of local markets. A farmer with only a few head of livestock to sell at one time could deliver them in his own truck.

Assembly. If the market outlet is over 40 or 50 miles away there is a greater tendency to hire a trucker to assemble these small lots of livestock. This presents many problems. Transportation charges by most truckers are higher for a pickup load than for a straight load. Frequently loading facilities on the farm are inadequate, resulting in increased cripples and bruises at time of loading. A recent study in one area indicated 40 percent of the farmers did not have loading chutes.

Such loads of livestock often have all species. Each species should be partitioned to reduce bruise and cripple losses. Strange animals when placed together in close quarters are often restless which increases shrink.

The first livestock loaded are frequently hauled 40 or 50 miles farther than the last ones loaded. This also increases shrink.

Market information. A farmer with only a few head of livestock to sell at one time may feel that watching the market is not as important as when he has several head to sell. He is less concerned with seasonal movements of prices, prospective market demand and price for his particular lot of livestock, etc. Knowing market grades of livestock is almost essential to interpret market reports.

Problems at the market. At the market small consignments present many problems. Even with small consignments there are frequently wide variations in weight, grade and quality which mean sales are in even smaller lots. More individual pens, alleys and personnel are needed to handle small consignments than to handle the same amount of livestock in large consignments. The arrangements of scales and facilities need to be changed to handle the small lots most effectively.

Conclusions. The above problems indicate that handling small consignments of livestock increase costs of marketing. The obvious solution would be to increase the size of livestock consignments. But this is often impractical. Therefore more attention should be given to ways of handling small consignments of livestock more efficiently. This would include: truck partitions that are easier to install; a cheap, adequate portable loading chute; efficient farm pickup service; proper protection of animals from excessive in-transit fighting; market information that is more readily understandable; and at markets a continued appraisal of the problem as it applies to the most efficient use of facilities.

W. J. WILLS

JOINT TENANCY — IS IT TAXWISE?

It is a common belief that as between husband and wife, joint tenancy is the best way to hold title to property. For the average family with a family home, a modest bank account and life insurance, holding property in joint tenancy may be the best method, particularly if the parents have young children and have not made a will. However, the farm family that owns a 200 or 300 acre farm and equipment has been placed in a new tax situation with the increased value of their acres. Taxwise, joint tenancy may not be as attractive to them as it was ten years back when the farm was worth only one-half or one-fourth as much. Here are some of the reasons.

Creating a gift. When a joint tenancy is created by purchasing or transferring real estate or stocks, there is an immediate gift of one-half of the value of the property (usually to the wife) unless both husband and wife contribute equally to the purchase price (contribution as a housewife is not sufficient). A federal gift tax may be due, or if the gift is not large enough for a tax (under \$66,000), the gift tax exemptions may nevertheless be wholly or partially exhausted, thus subjecting future gifts to tax liability.

Paying a gift tax does not prevent the imposition of a federal estate tax when one of the joint tenants dies. However, credit is allowed for any gift tax paid.

Basis for income tax. An heir of property takes it at fair market value as of the time of death of the ancestor. This is not true of a surviving joint tenant — his basis is the adjusted original cost. If the property has greatly appreciated in value and a sale is intended by the surviving tenant, a substantial capital gains tax may be incurred. For example:

Cost of 200 acres in 1932.....	\$20,000
Improvements since 1932.....	\$ 5,000
Adjusted basis.....	\$25,000
One joint tenant dies (husband) in 1951 and surviving tenant (wife) sells in 1952 at.....	\$50,000
Gain.....	\$25,000
Taxable Capital Gain.....	\$12,500 (Rate not to exceed 50%)

In this example, *no* income tax would be due if the husband had sole title to the farm, had given it to his wife by will, and she sold the farm shortly after her husband's death. However, an offsetting factor would be

a higher state inheritance tax if the entire farm was left to the wife by will.

Depreciation rate. The farm itself is not depreciable but buildings and certain land improvements are, thus making depreciation an important factor to consider.

When property is inherited, a new depreciation schedule can be set up by the beneficiary. But a surviving joint tenant continues the same schedule and rate which existed prior to the death of one tenant.

The importance of this factor depends on the value of depreciable property on the farm and the total cost to be recovered at the termination of the joint tenancy.

Splitting income. Before 1948, holding property in joint tenancy gave an advantage of splitting income between the tenants for income tax reporting. In 1948, this advantage largely disappeared, since the Revenue Act permitted husband and wife to file a joint return regardless of who held title to property or who received the income.

Death taxes twice. The "marital deduction" is a recent device allowing a husband or wife to leave up to one-half of his or her property to the other without tax. Joint tenancies qualify for this deduction so that an estate held in joint tenancy and worth up to \$120,000 can be left to the surviving spouse without paying any federal estate tax. However, when the survivor dies, the axe falls. With no marital deduction available and holding title to all the property, the federal estate tax strikes hard since the rates are steeply progressive. The tax on \$120,000 would be about \$9,400.

If an estate tax was paid upon the death of the first joint tenant, and it is taxed again upon the death of the surviving tenant, the same property is subject to death taxes twice, possibly within the span of a few years. For example:

300 acres at \$400 per acre in joint tenancy.....	\$120,000
Livestock and equipment — to the wife by will.....	\$ 20,000
Life insurance to wife.....	\$ 15,000
Other personal property, such as bank account held in joint tenancy.....	\$ 15,000
Total	\$170,000
Husband dies first: <i>federal estate tax</i>	\$ 2,300
Wife dies 6 years later with same estate: <i>tax</i>	\$ 22,980
<i>Combined federal tax</i>	\$ 25,280

Many believe that the surviving joint tenant inherits only one-half of the property. Although this is true when figuring the Illinois inheritance

tax, it is not correct for federal estate tax computation, unless the survivor can provide evidence of having contributed equally to the estate. If the wife dies first, and the husband contributed the entire purchase price, no part of the joint tenancy property is included in her estate for federal estate taxation. If the husband dies first, all the property held in joint tenancy is included in his estate, and of course all of it is subject to the federal tax when the wife dies.

Conclusions. From the above discussion, one may reasonably conclude that joint tenancy is desirable only in cases where federal revenue laws are of minor importance. This involves consideration of the gift tax, income tax and estate tax laws.

Joint tenancies are eligible for the marital deduction, but this may offer only temporary relief since the surviving owner can not use the marital deduction. On estates above \$60,000, joint tenancy will generally increase the combined death taxes on the estate, and if the estate exceeds \$120,000, the estate may be taxed twice, depending on who dies first and how much property each contributed.

Creating a joint tenancy may involve a gift tax, plus using up the gift tax exemption, with only a small saving on the federal estate tax.

A substantial capital gains tax may be incurred when the surviving tenant sells the property, if the property has appreciated in value since its acquisition by the decedent. The "basis" carries over to the survivor.

The same principle applies to depreciation. Property taken by a surviving joint tenant continues to be depreciated at the same rate. Both the basis and the depreciation schedule start anew, as of the time of the decedent's death, if property is transferred by a will or by law (intestate).

Whereas holding property in joint tenancy allows husband and wife to split income, this advantage has been dissipated by the 1948 revenue act permitting joint returns.

From the foregoing discussion one could draw another conclusion — that if taxation is an important factor in planning an estate, the layman should obtain counsel before placing property in joint tenancy. The problems are technical and the tax picture a broad one.

Because of the growing importance of the gift and death taxes, particularly to the farm family holding title to a farm and considerable personal property, only the tax aspects of joint tenancy are discussed in this article. No attempt is made to point out other advantages or disadvantages of joint tenancy which may outweigh the tax consequences.

N. G. P. KRAUSZ

Footnotes for the last page:

¹⁻¹² The first source is for annual data; the second is for current data from which tables may be brought to date.

¹ Survey of Current Business, 1942 supplement, U. S. Department of Commerce; Subsequent monthly issues. Converted from 1926=100 to 1935-39=100 by multiplying by 1.240694 for col. 1, and 1.315789 for col. 2. ² Same as footnote 1. ³ Illinois Crop and Livestock Statistics, Circular 444 (1945); monthly mimeographs of Statistical Tables for Illinois Crop Report, converted from 1910-1914=100 to 1935-39=100 by multiplying by .8834. ⁴ New series — includes Wage Rates, Agricultural Prices, Bureau of Agricultural Economics, U.S.D.A. ⁵ Calculated from data furnished by Bureau of Agricultural Economics; Survey of Current Business, unadjusted. ⁶ Calculated by Department of Agricultural Economics, University of Illinois, unadjusted. Data on receipts from sale of principal farm products (government payments not included) from Farm Income Situation, Bureau of Agricultural Economics monthly mimeograph. ⁷ Obtained by dividing Index of Illinois Farm Income (column 6) by Index of Prices Paid by Farmers (column 4). ⁸ Same as footnote 5. ⁹ Same as footnote 1, except that data for 1939 and later years are not strictly comparable with earlier years. ¹⁰ Federal Reserve Bulletin of Federal Reserve Board. ¹¹ Preliminary estimate. ¹² Illinois Crop and Livestock Statistics, Circular 444; Monthly price releases, State Agricultural Statistician. ¹³ Monthly prices and 1949 refer to baled hay. Other annual data refer to loose hay.

H. P. Rusk

Director, Extension Service in
Agriculture and Home Economics

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TABLE A. — INDEXES OF UNITED STATES AGRICULTURAL AND BUSINESS CONDITIONS

Year and month	Commodity prices				Income from farm marketings			Non-agricultural income payments ⁸	Weekly wages, all manufacturing industries, unadjusted ⁹	Industrial production ¹⁰
	Wholesale prices		Illinois farm prices ³	Prices paid by farmers ⁴	U. S. in money ⁵	Illinois				
	All commodities ¹	Farm products ²				In money ⁶	In purchasing power ⁷			
Base period...	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1935-39	1939	1935-39	
1935.....	99	104	102	99	89	80	91	86	79	87
1936.....	100	107	105	99	105	106	107	101	91	103
1937.....	107	113	118	105	111	111	105	107	109	113
1938.....	98	91	90	99	96	101	102	100	85	89
1939.....	96	86	84	98	99	102	104	107	100	109
1940.....	97	89	89	99	105	114	115	115	114	125
1941.....	108	108	112	105	140	147	140	138	165	162
1942.....	123	138	142	121	193	198	163	176	242	199
1943.....	128	162	165	136	244	236	174	217	331	239
1944.....	129	163	165	145	255	243	168	242	344	236
1945.....	132	168	171	151	270	248	164	250	294	203
1946.....	150	195	204	165	312	302	185	255	272	170
1947.....	189	238	265	192	377	391	204	279	327	187
1948.....	205	248	275	207	383	389	189	303	351	192
1949.....	192	218	217	200	352	362	181	304	325	176
1950.....	200	224	228	204	350	360	176	330	372	200
1950 Oct.....	210	234	236	208	545	514	228	344	416	216
Nov.....	213	242	240	210	511	429	204	346	415	215
Dec.....	218	247	251	212	417	371	175	359	426	218
1951 Jan.....	223	256	261	217	378	393	181	356	424	221
Feb.....	228	267	277	220	281	307	140	358	430	221
Mar.....	228	268	276	224	303	376	168	362	435	222
Apr.....	228	266	278	226	313	395	175	366	433	223
May.....	227	263	274	226	319	390	173	368	428	222
June.....	225	261	270	225	323	348	155	370	434	221
July.....	223	255	269	225	398	497	221	370	423	212
Aug.....	221	251	271	225	450	393	174	372	430	217
Sept.....	220	249	270	225	511	394	175	373	437	219
Oct.....	221	253	272	226	655	662	293	377	433	222
Nov.....	221	257	267	227	538	...	...	378	...	219

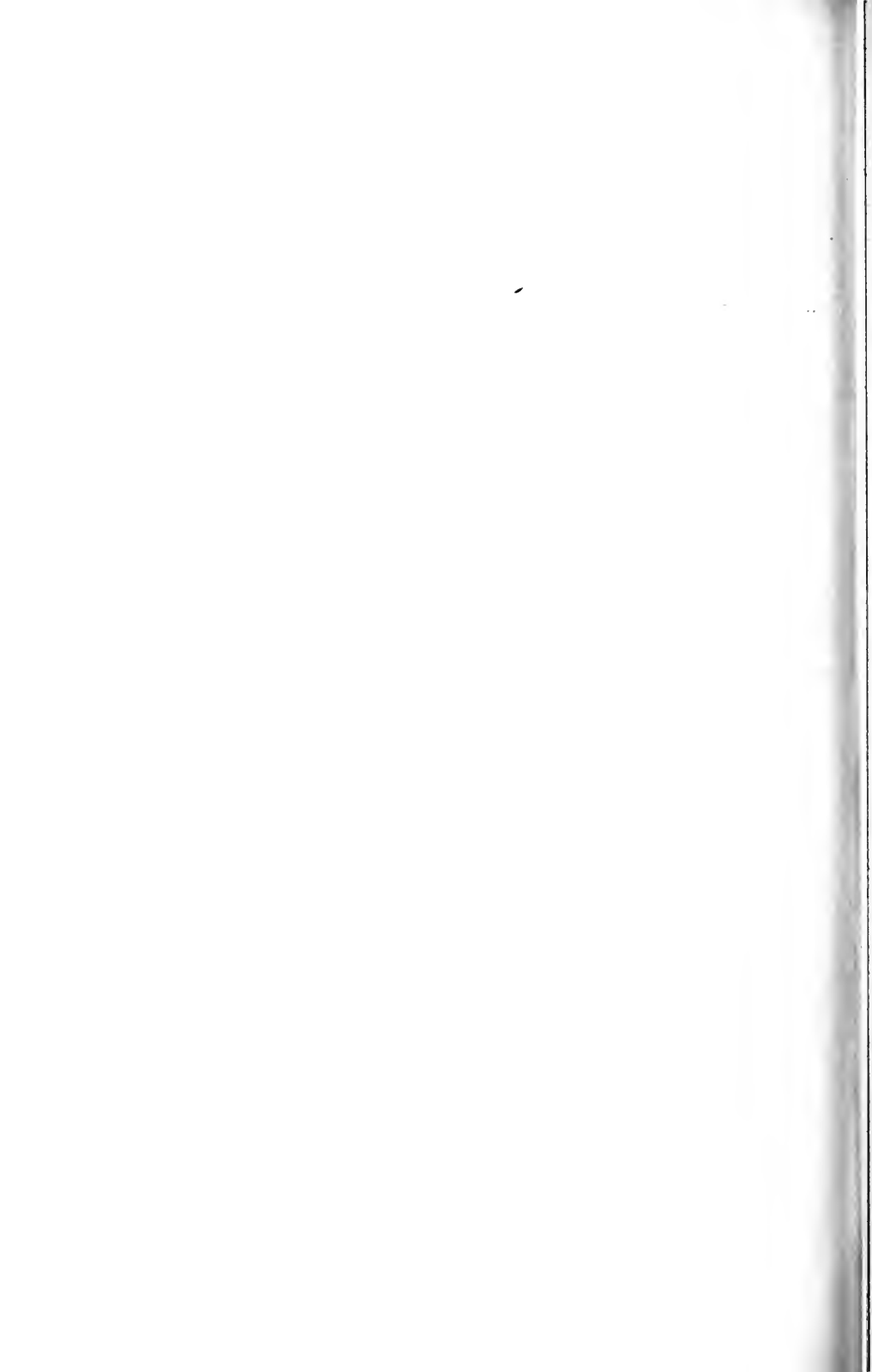
TABLE B. — PRICES OF ILLINOIS FARM PRODUCTS¹²

Product	Calendar year average			Dec. 1950	Current months, 1951		
	1933-39	1950	1951		Oct.	Nov.	Dec.
Corn, bu.	\$.66	\$1.35	\$1.67	\$1.53	\$1.67	\$1.67	\$1.77
Oats, bu. ....	.31	.76	.87	.88	.82	.96	.96
Wheat, bu. ....	.86	2.02	2.24	2.12	2.21	2.29	2.38
Barley, bu. ....	.62	1.20	1.36	1.32	1.32	1.39	1.39
Soybeans, bu. ....	.90	2.49	2.95	2.80	2.68	2.83	2.89
Hogs, cwt.	8.52	18.19	20.38	17.70	20.60	18.20	17.90
Beef cattle, cwt.	7.88	24.54	30.56	27.70	31.00	30.20	29.00
Lambs, cwt.	8.36	25.12	31.66	28.10	29.10	28.60	28.70
Milk cows, head	58.00	216.67	267.50	230.00	280.00	280.00	275.00
Veal calves, cwt.	8.66	27.73	33.53	30.00	33.30	32.30	32.00
Sheep, cwt.	3.58	10.52	16.07	12.50	14.00	13.10	13.30
Butterfat, lb. ....	.27	.58	.66	.60	.66	.67	.72
Milk, cwt.	1.68	3.45	4.15	3.90	4.30	4.50	4.55
Eggs, doz. ....	.19	.31	.42	.53	.49	.49	.43
Chickens, lb. ....	.15	.23	.27	.23	.24	.22	.23
Wool, lb. ....	.25	.53	.80	.73	.56	.56	.54
Apples, bu.	1.08	2.24	2.04	2.30	1.80	2.10	2.10
Hay, ton ¹³	9.39	20.77	22.08	22.40	19.60	20.90	21.70

¹⁻¹² For sources of data in tables see the preceding page.

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